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BIRD NOTES

from

40 Selborne Drive

Piedmont, California

1933 to 1939

by

Ernest I. Dyer

PART II

July 11, 1933, to December 30, 1933 . . . pp. 266-549

(last part of Dec. 30 is bound in Part III,

on p. 550)

Subject: mainly Thrashers

with two pages of illustrations

July 11th. At 7:30 A.M. there were no young of the first brood to be seen anywhere, and the parents were not at the nest. I stepped out on a balcony at the western end of the house, ten or twelve feet above the ground, ~~and~~ overlooking the wooded canyon below, and called. Shortly Brownie came and made several ludicrously ineffective efforts to fly up to me, but fell short each time. I tossed a couple of worms down to her, which she took to the nest. I then had breakfast, expecting her to come into the dining room on the other side of the house. She would have to travel about ~~150~~ feet to get there by the irregular route she would have to take. I was not disappointed, for she soon came into the dining room, ~~and~~ jumped up to the table and carried food back to the nest. Later I went to the nest and cooperated with her in feeding the young soft food. Still later, when the parents were off foraging, I had a look at the nestlings. They are beginning to take some interest in outside affairs; one of them in particular being quite ready to take food from the spatula when it is offered, whether his parents are there or not. I have ^{fastened} a dish of moistened soft food about a foot from the nest. The parents do not seem to touch it, yet when I pick food out of it with my fingers and offer it to them they will eat it themselves and also feed it. I can not account for this.

At 7:30 P.M. as I was looking for the first brood (without success) Julio brought me a gopher snake, I would say between three and three and a half feet long. I told him to bring it to the oval lawn, as I wanted to see what the thrashers would do about it, as one of them would probably come there shortly, since one had just taken food from me there and was about due on a return trip. Brownie soon came trotting out (Mr. Will Sampson says that she is a pacer) and I took the snake by the tail allowing about half of its length on the ground. As soon

as Brownie saw it she ran rapidly up to it with tail ^{spread}, making the clucking sound which I have ^{heretofore} heard her make only when "talking" to the young birds. She inspected it a few moments, then, raising her wings, struck it a hard blow ^{with her beak}, which could be easily heard, the snake making no defense, but trying to escape into a flower bed where it got some kind of a grip and pulled hard. Brownie danced about it clucking and dealing one blow after another. I pulled the snake out from amongst the flowers, so that it would be in the open, and gave it enough slack so that it could strike back if it wished and so that Brownie might be faced with a real attack. However, the snake merely coiled up as much as it could and did not strike back, although the bird continued to give it occasional single pecks, backing away each time, and appearing to be willing to keep this up indefinitely. I do not think ^{any} ~~much~~ real damage was done--I did not expect there would be--but it was hardly a square deal for the snake, so I told Julio to take him away and confine him (instead of deporting him in accordance with our standard procedure) as I might wish to get a picture of a scene like this, because nobody would believe the story without something to back it up. Brownie watched the snake's ^{at} departure in Julio's custody with no particular interest--I had thought that she might follow--then continued, in company with Greenie who had come up after the performance was over, to gather more food.

This snake was not molesting the thrashers in any way and was not even near their nest. He was undoubtedly recognized as an enemy instantly. Whether it was because he was a snake or because he was the snake, I do not know; but I more than half suspect that this is not the first time I have had him by the tail. He looks identical in size with the last four carted away and was caught in exactly the same misdoings as the last one, viz: after the pigeon's eggs. Also I believe he submits to capture too philosophically to

for a novitiate. Gopher snakes often strike viciously, attempt to "climb up themselves" to get at the tail-holder, somehow achieve a triangular shape to their heads and vibrate their tails like a rattlesnake, but this fellow, aside from an occasional half-hearted thrust of the head had none of these tricks. Therefore it is uncertain whether this incident illustrates instinctive recognition of a racial enemy or of a specific individual previously encountered. I think, however, the former, in view of the unstaged snake-fights already recorded in these notes.

July 12th. 11:55 A.M. I have just visited nest No.4. All the young birds were sleeping, no parents in sight. Brownie came at once, but had no food for the young, nor did they want any. Brownie settled on the nest and accepted a little food for herself but offered none to the brood. She then closed her eyes for a nap, after watching me arrange a bit of shade where the sun was shining hotly through an opening in the foliage to the discomfort of the young birds. Her respiration was 42 when in full repose. Occasionally she opened her eyes for an instant at some unusual sound, but closed them again immediately ^{as} ~~instantly~~ I watched her for a minute or so and ~~when~~ I left she did ^{them and they remained closed} not open ~~her eyes~~ again as long as I could see her. She seemed to be sleeping. At about seven this morning she came up to the balcony again for food. There have been no signs of brood No.1 this morning. Members of both broods, while in the nest, ^{often} assume the curious attitude when sleeping of laying their heads on the rim and placing their feet on each side of their bills.

7:30 P.M. No signs of any one of the first brood all day.

July 13 th. At 8 A.M. no thrashers in the glade. All of the youngsters in the nest were wide awake. The parents were away and did not come while I was there. Two of the babies crouched down in the nest when they saw me, one of them raising its wings. The third one opened its bill for food and had a good big helping of soft food.

For no valid reason that I could detect he then squealed once and would take no more food, although he did not seem to be frightened.

While sitting on top of the ladder yesterday afternoon, waiting for the adults to put in an appearance, in order that I might observe any new phases in their habits, Brownie appeared first with earthworms. From previous observations I had about reached the conclusion that, on the comparatively rare occasions when earthworms were fed, Greenie was invariably the bearer. Perhaps these notes will show otherwise, but, in any case, that was my thought at the moment. In attempting to break them up on a horizontal limb, she dropped one piece after another until, from where I sat, there seemed to be nothing left. She dropped to the ground, but could find only a few fragments amongst the leaves and litter. Most of these she ate herself, Greenie begging for some, but not getting any. She then came to the nest with one almost invisible fragment, so I helped her give the young birds a respectable meal with soft food, after which she settled on the nest and dozed. Later while occupying the same position, I was able to observe an interesting excavation job by the same bird. She appeared from out of the shrubbery near the base of the ladder and commenced digging, apparently at random, pausing to inspect the hole made, from time to time, by putting her head in it and turning it from side to side. As a result of one inspection she changed the pit she was making into a trench, the direction of which appeared to have been determined by some observation made in the side of the hole, and its course was fixed in the direction desired by shifting her body into the new alignment. She now began to dig rapidly, the earth melting away in front of her attack, some portion of it seeming to be in continuous process of dissolving into space. From time to time she checked the direction of the trench by scrutinising it. I sat alone quarters much as a watchmaker inspects a watch with his eye glass. The action was exactly that of a dog following the burrow.

Reel #8
 stood by my plate waiting for something to eat. Greenie flew into the room by another window and out again immediately, being frightened by the door to another room being suddenly opened. Brownie got what she wanted and flew directly out the window from the table. 10:30 A.M. Using 1" lens with stop set between f/5.5 and 8, got 4 feet of Greenie sitting on a rock about 9 feet away, camera held in the hand. After this both birds began making regular trips between the nest and myself, Greenie jumping up into my hand just like Brownie, but not insisting like Brownie upon getting at the worm box too. When I held it out to him he then dug worms out of it in approved fashion. He made more trips than Brownie--for the first time--and continued after Brownie had left, until the last worm was taken. On one of his trips to the nest he caught a honey-bee without dropping the worms he was carrying until it was necessary in order to prepare the bee for consumption by the young birds.

July 15th. Up to 1 P.M. no signs of any one of the first brood. The second brood will be able to leave the nest soon. Their tails are now about an inch and a half long. I have made no effort to tame them and have fed them directly not more than a half dozen times. It would be very easy to tame them if they were taken in hand now. I have not checked on their ages, but the youngest is known to be not less than 12 days old.

About 2:30 the gopher snake was brought in his cage to the steps at the oval lawn, Mr. W.F. Sampson being on hand to witness whatever might occur. The camera was set up and the field of view was marked out on the road. Brownie was induced to jump up on the cage for a pre-view and as soon as she saw the snake beneath her feet became mildly excited, danced about and clucked. I took the snake by the tail and introduced him to the camera. Brownie, while interested, was not nearly so excited as on the previous occasion.

Although she sidled about and clucked really got in only one good peck. When the snake was allowed to conceal himself in the flower bed by the pool, she searched for him, but not very keenly. The snake was brought out again and Greenie, who had come to see what it was all about practically duplicated Brownie's performance. Neither bird was particularly concerned about the creature's ultimate destination and the snake itself did not offer to fight back and was not very quick to take advantage of the opportunity given him to get away. He finally curled up amongst some violas where he stayed for a long time quietly, Brownie taking an occasional look at him, with spread tail, lifted wings, clucking meanwhile, but not attacking him. When he left this spot for another she pursued him and made one or two pecks at him, but there seemed to be no real enmity shown. Perhaps she realizes that he is harmless as far as the present brood is concerned. Both birds loafed around us perhaps a couple of hours, more especially Brownie. During this time Greenie discovered a Yellow-bellied Racer about 25 feet from us and got it by the tail as it was disappearing amongst some columbines, but let go. I saw the pursuit only, but Mr. Sampson saw the contact. I got a film of both of the birds in action with the gopher snake.

(1" lens--from 4' to 29½' footage--first part Brownie, second, Greenie. Dis. 10 to 15 ft., F/5.5-8, full sun)

The exhibition, on the whole, was disappointing as a spectacle; but informative, nevertheless, as introducing for the first time Greenie as a snake catcher and showing the exact degree of animosity exhibited by his mate and a physical application of it precisely similar. The approach, the attack, the pursuit and the subsequent search were alike in all essentials. Inasmuch as Brownie's fierceness had manifestly abated since the episode of the other day and Greenie's behavior was the same, it would seem to indicate that there was some new element introduced which effected both thrashers

alike . The location was the same as that of the previous encounter, there was the same number of spectators, although Mr. Sampson replaced Julio today. Today there was a camera on a tripod, but the birds paid no attention to it. The snake was less active and also, presumably, Brownie must have learned--or at least had had a good opportunity to learn from the previous encounter--something as to its lack of formidability in a personal encounter and its undesirability as food. This is, of course, mere conjecture and does not explain why Greenie adopted the same attitude unless he had had previous encounters with the same snake or one like him.

July 16th. Brownie came up to the upstairs porch for breakfast. No thrashers in the glade at 8 A.M. +

At 11 A.M. I noticed Brownie carrying a large object to the nest, so hurried there. Brownie was standing over the young birds and one of them was making heroic efforts to swallow a lizard but could not get its fore feet and legs by the corners of its mouth. I watched long enough to see that it was clearly an impossible feat, then pulled it out with no protests from the youngster or its mother. The head was gone and it was quite limp. I proceeded to dismember it, finding it exceedingly tough. It was an adult with eggs. I distributed various portions directly to the young and also via Brownie, the latter also eating parts of it herself. The eggs were about the size of those of the Bush Tit and had no shells. It had only the stump of a tail, the wound having healed over. The body length between point of attachment of the legs was about 2 inches. As a guess, I suppose it was originally about 4 inches overall. Every vestige was eaten--bones and all. The nest and its vicinity will be watched for pellets. At the price of meal-worms as usually sold, I should say this lizard was worth about \$1.50 on the hoof, assuming the bones to be digestible!

At 12:10 when I again visited the nest, Brownie arriving at almost the same time, they were ready for a round of worms, Brownie doing the honors. After this all, including Brownie, composed themselves for a nap. No pellets. I have placed a screen below the nest to catch any.

4:30. I have visited the nest a number of time since the foregoing note. The young birds are very active and sometimes come out and stand on the rim of the nest to get food from their parents. A slanting shaft of light through an opening in the foliage about an hour ago showed particles of what I suppose to be fragments of the sheath covering the stems of the feathers floating in the air at each movement in the nest. When the parents came to feed the young the quantity increased and when all was quiet in the nest, none was to be seen. About 4:10 I took a fresh supply of moistened soft food to the nest, the parents being absent. The young birds shrank from me at first when I offered it to them on the spatula, but when I endeavor to imitate the parents' chuckle and touched them lightly on their heads, I got a few acceptances and when I added to my repertoire a somewhat elementary imitation of the parents' approach call, I was kept busy. Soon one of the parents could be heard giving the real call and the youngsters responded instantly, taking food from me freely, reaching for it in fact, even when the parent arrived. This was Greenie with grubs of some sort. When his stock was exhausted (he gave it all to one bird) he seemed perfectly contented to have me continue the feeding and ate freely himself. Brownie came next without food and Greenie soon left. Brownie seemed satisfied with existing arrangements and very hungry herself. She was sitting on the head of one of the nestlings so that I could not feed it, so I pushed her aside with my hand. She opened her bill at me in protest, but when I put food into her mouth with the spatula forgot all about her momentary disaffection. When neither she nor the young birds

would take more food I left. This shows how e^sy it would be to tame these birds by giving them a little time and keepⁱng their parents from driving them away. They are already "broken in" as far as food is concerned and would make wonderful pets. I do not like to think of their being driven off to shift for themselves and to be at the mercy of stray cats, small boys and the adults with traps who will catch them without permits or knowledge of how to treat them. In a populous district like this they would be much safer and happier in an aviary. I should like to know where Brood No.1 is.

The present youngsters are fully feathered and have all the mark-
ings of adult birds before leaving the nest, just as the other brood
had. Their color scheme is the same^{as that of the adults} as also are the hues, shades and tints. They are, of course, juvenile in appearance and form; have their natal down and the yellow "hinges" of their jaws still. Their bills and tails are, of course, also short; but they are veritable thrashers and could not be mistaken for anything else by one who knows the adult bird. They are in marked contrast to Spotted Towhees of the same age, who do not look like much of anything specific.

July 17th. At about 8 A.M. I went to the nest. No pellets. Evidence so far goes to show that lizard bones and skin are readily convertible into thrashers.

When I exhibited soft food to the young birds on the spatula and chuckled to them, they did not hold back for an instant, but reached for it eagerly and I fed them well before Brownie came to join the group with her contribution. She regards my activities complacently. The youngsters will not be in the nest much longer and I would not be surprised if one^{or more} left today. On account of the location of the nest, it will be^{more} difficult to keep them together than was the case with the first brood.

After giving this matter consideration I decided to ask the Fish and Game Commission for a permit to keep the three young thrashers in captivity in order to have them under further observation. Accordingly I went to their offices in San Francisco and permission was readily granted. On my return at about 11:15 I went directly to the nest, finding Brownie sitting in it, and for some reason not overly friendly, opening her bill at me in a rather hostile manner. I offered her a worm and she snatched it ungratefully, giving it to the youngster whose head was projecting on my side of the nest. This was repeated several times, so I decided to investigate what lay back of her incivility and incidentally see if all the young birds were present. As I extended my hand to raise her from the nest she seized a finger, bit as hard as she could and tried to shake it. She did not peck me and her bill is not of much use for biting. There was only one nestling present. Why she should have been ill-tempered I do not know, but evidently my intrusion at this particular time was unwelcome. A search was organized for the missing birds. Instead of waiting for the parents to come for food and thus reveal their location, we looked for Brownie, since he was sure to "scurry" sooner or later. Sure enough, he was soon heard, and in his neighborhood one of the youngsters was seen sitting in the lower branches of a pine about 100 feet from the nest. This little fellow was picked off as easily as a plum. He did not shriek, struggle or cry out and swallowed soft food at once with comfortable chuckles. He was put temporarily in a cage in the middle of the oak lawn and settled down to nap. So that he would not be lonely I went and got his nest-mate from under the eaves. Brownie, giving her a warning glance, snatched it before. I reached over my head on the S. W. side of the nest and was watching my toes (or at least I thought I was) when the youngster, who remained in the nest, was seen to be

... this young one in the cage also. ... soon
the cage, for reason ... did not ...

his partial offspring. He showed ... the third and
... about ten feet away in a very thorny bush. This was
achieved by thrusting a long stick into the bush and inducing him to
step on it, then the stick was pulled out carefully with him sit-
ting safely on the end. He also was ... for soft food and, like
both of the others, showed no fear. The bird tried persistently to
feed the young birds through the wire mesh with indifferent success.
Brownie joined her efforts after deciding there was not much point
in sitting longer in an empty nest. I made a hole one inch in
through the wire mesh and set on the grass within arm's length.

... the parents saw the point at once and tried
to do their respective parts, but it did not work well, so I fed the
... myself at about half hour intervals. He force-fed

However, I wanted the old birds to have as much to do
with the young as they chose, insofar as confinement of the latter
would permit, both for the sake of the parents, who were my oldest
friends and were showing considerable concern at my doings, as well
as for the young. Accordingly I got the cage used by Mr. Brock's
orioles and inserted a panel of 1 inch hexagonal mesh wire screen
("Chicken wire") in such a way that the parent birds could pass
food downward through it. This worked all right the few times it
was used, but the parents, for some reason best known to themselves,
persisted in ignoring it most of the time. The young ...
... I ...
... the parents ...
... it. ...
...
...

Neither Brownie nor Greenie seemed to cherish any ill feelings towards me and came to me for worms as usual, but less frequently because they were not able to dispose of ~~as~~ as they wished, but on account of their anxiety principally, I decided to release the brood and let the parents care for them as they wished to do. I gathered them all up, fed them and put them on the lawn. The parents were already there and began feeding them at once. They all gradually scattered into the trees and bushes surrounding the oval lawn, since it was now getting well along in the evening, and shortly all was quiet again. If anything happens to them, it will be in the natural course of events and not through intervention of mine. Perhaps if the parents bring them through to the point where they begin to show indifference to their welfare I may pick them up again--if they become as friendly as the first brood--and keep them under observation. I do not care to break the family ties at this juncture.

July 18th. About 8 A.M. I went out for a general survey. Greenie was on the oval lawn, came and got worms which he took off in the direction of the orchard. As I passed the glade, Brownie came out, got a good load, went back in, but went out at the other side. I followed her to where she was feeding one of the youngsters in a bush at the oval lawn and stood with my eyes about two feet from the operation, neither bird being embarrassed by my presence. Brownie dropped several of the worms during the process and while recovering them, uttered a loud, sustained, musical call, evidently intended for her mate, because he answered similarly from the direction of the nest. I do not know whether it was intended to tell him that she had located a source of food, or that it was simply for the purpose of keeping in touch and advising that all was well; but think the latter. She also sang a little to herself while searching for the dropped worms, and is just as friendly as ever. I made no further

attempt to find the rest of the brood at the time.

6 P.M. Greenie has been seen only once since the first time this morning and Brownie seems to have fed but the one bird, so has had a lot of time to spare. Neither of the others has been seen all day and Greenie has not revealed their location. This is exactly parallel with the happenings in connection with the first brood. The one fed by Brownie has a scratch on its forehead identifying it temporarily. Most of the day was spent by it in a hedge, whence neither it nor its mother objected to its being removed occasionally, fed and carried about, then returned to the hedge. It is now in the glade and must have walked there, since it can not fly, nor could any of the six young thrashers observed here, when they left the nest.

I took a film of Brownie coming down the road to hang around me as she has been doing all day. She showed symptoms of having a good dig near me and I photographed her thinking any moment she would begin, but was disappointed. (This was about 2 P.M.) (29¹ to 36¹-f/8 1" lens --full sun.

About 3:30 as I was strolling about with the camera looking for subjects--more especially hummingbirds--I caught another 3 foot gopher snake. Thinking Brownie might be interested, I took it up to the road near the oval lawn. Soon there was a clucking behind me in the bushes; Brownie came out ready for action. I let the snake go. She approached it carefully then chased it under a dwarf heather pecking it as it fled. She then spent 5 or 10 minutes posturing about the low bush where the snake was hidden--I could see it by lifting a branch--but I do not think that she was any too keen about driving it out from its refuge. (1" lens--f/8--footage 43¹ to 61. **Note: The paragraph that follows should precede this one).**

At about 3 P.M. Brownie came down into the glade where I was sitting and, without coming for worms, planted herself in front of me and had a long and successful sun-bath. Although she was a little close, I fear, for the universal focus lens, I took portions

of the proceedings. This is a rented camera and I do not know the minimum distance for this lens. Last night must have been a hard one for her, for she is sleepy this afternoon. After the "fit" she sat on a branch in the open about 5 feet in front of me, ~~and~~ level with my shoulder and dozed. There are missing feathers here and there on her back and head and occasionally when she scratches, a feather is dislodged. (I wonder if this is a sign of approaching moult). Poor little Brownie is an indefatigable worker.

Rec-38 (1" lens--7 (?) feet dis.--f/8, footage 36½ to 43½). Sun-fit.

July 19th. At 7:30 A.M. both Brownie and Greenie were on a path S.E. of the glade. As I entered the glade Brownie came in but her mate did not appear. The young thrasher with a scratch on its forehead was sitting in an old-man about a foot above the ground in plain sight--a place much affected by members of Brood No.1. Brownie got worms from me and, although the youngster was only about 6 feet away, she did not find it at once. When she approached him he greeted her with the harsh, snarling sound that young thrashers make when angry or afraid and pecked at her. This was unusual. However, Brownie fed him and the second time he did not make this sound, nor did he when I gave him soft food which he stretched his neck out ^{for} ~~far~~ eagerly. He showed no sign of fear despite the fact that it was necessary to make considerable disturbance in the branches to reach him. If he follows thrasher precedent, he may sit in this same spot for hours.

10:25. About 9:15 I looked all over the place and in favorable spots outside the fence to see if Greenie and any of the brood could be located; but nothing was discovered. Returning to the glade, I found Brownie there ready for more food. I gave her worms which she took, as near as I could tell, to the same bird, which was out of sight in the bushes a few feet from its former location, but not

visible from my chair. She made several trips to the same general area about 15 feet from me. There was nothing to indicate that more than one youngster was there. She spent about 15 minutes preening, digging and sunning herself near my feet, occasionally moving into the shade to cool off. At 9:40 the missing Greenie came into the glade from the north with food and went directly into the bushes where Brownie had been taking worms. Brownie watched him intently, without moving for perhaps a minute and then passed out of sight behind me and shortly and for the next 15 minutes (actual timing--approximate) sang softly at frequent intervals. By craning my neck I could see that she was sitting in the top of a small flowering peach 25 feet away. At the end of the period stated she disappeared, but as I was watching Greenie in exactly the opposite direction, I could not tell where she went. Greenie came out of the bushes and took worms from me back into the bushes, apparently to the same spot as before, but there was no way of determining this from my seat. He made five or six trips and then, until about 10:20 repeated Brownie's preening, digging and sunning performance with alternate periods of cooling off. Meanwhile no feeding was being done in my vicinity. About 10:15 Brownie could be heard singing softly again behind me. She came by me and paused near Greenie, who was in the middle of a very thorough sun-fit. Greenie acknowledged her arrival with a few musical phrases, then both birds went off to dig about 20 feet away on opposite sides of the glade. This sudden determination to dig in earnest ^{vigorously} coincided in time with beginning of repeated calls of a young bird in the bushes and may have been inspired by them. I called Brownie and she ran to me quickly, jumped up to my hand, got a bill full of worms and ran into the bushes, coming out the other side shortly afterwards without them and immediately began a new sun-fit. I looked into the bushes as I passed out of the glade and could see one young bird sitting in a coyote bush (*Baccharis*).

12:40. Most of the morning was spent in the glade. Brownie was there practically all of the time, Greenie but twice. Little feeding of the young was observed. The same young bird finally came out of the bushes for a short time and during that period was fed by Brownie, who dug for food in his presence and handed it to him on the spot. Whatever she got was so small that I could not see it; but she seemed to get a good supply. Possibly some of it was ground-stones for his digestive apparatus. Brownie's upper tail coverts have been missing for some time, giving her a "chopped off" appearance whenever she ruffles up her back feathers or lowers her tail. Greenie's are intact. Brownie picked up and dropped a few soap-root fibers, there has been more singing and calling back and forth than ~~there has been~~ for the past several weeks and, for a few moments, both adults were heard "talking" and rustling about in the foliage of one of the oaks. Considering, also Greenie's long disappearances, it may be that these are nest-building symptoms--but I hope not.

6:37. About 5:30 both adults were seen and heard about 75 feet away cavorting about each other on the ground. As I was moving up to investigate a motor-car came up the road with visitors and it was all off. At about 6:15 one of the birds was in the top of the old oak lying down on the stub of a limb. The other was examining a black acacia, a California laurel and a live oak, successively, just across the entrance drive-way. This bird was making a detailed examination --so it appeared--of places suitable for nesting sites, especially in the oak. I have not seen this behavior before and while I doubt if another nest will be built, I can not see any other explanation that looks plausible. Twigs were tested with the bill, i.e. they were pulled and bent, crotches were sat in and the spaces above inspected, and turning the head from side to side by looking up into them and one or two dead twigs in the spaces were broken with the bill. Altogether the acts were such as I would have performed if I were looking for a good place to build. I realize that it is dangerous

to draw conclusions as to bird behavior on the basis of human concepts, hence the interpretation of the actions of this bird--which proved to be ~~unjustified~~ ~~unjustified~~.

*Recall 2
6/26/22
Anna Hummingbird
1-48*

July 20th. At 7:30 A.M. no thrashers were in the glade as far as could be seen. I called and a distant "scripping" seemed to answer, but as this got no closer, I looked off to the S.E. and a bird from which the sound appeared to come was seen about 150 yards away in the top of a tree by the side-walk. I called and it seemed to answer, but shortly flew directly away from me, and when last seen was fully 250 yards away and still flying. It disappeared, but the sound ^{could} be heard moving from place to place in the grounds of a large home at the approximate distance stated. (I have explored the vicinity and in one or two cases have located reference points with a ~~distance~~ ^{one} yard. Thus the gable end of ~~the O'Neil~~ house is 357 yards from a certain mark in my garden).

I returned to the glade, and called again and, in a few moments, Brownie came from the direction in which the scripping was heard. To the wonderer was undoubtedly genuine. (I wonder if he has induced the two missing youngsters to follow him over there). Brownie came for worms and hesitated about delivering them, evidently not ^{precisely} knowing where to go. However, she started off toward the house, and after some wandering, located one of the young birds after following a circuitous course. This, I think, was done by sound, as I could hear the young bird calling coincidentally with ~~the~~ ^{the} scripping heard toward the sound.

Not 42

(Next No. 43. A blue jay's nest limnet of purple ~~limnet~~ ^{limnet} in the ~~front~~ ^{front} of the house. It was all that it was not found earlier).

By 3 o'clock Brownie was back again. (It is a very common bird). The young bird-No. 4 (the one with the ~~red~~ ^{red} forehead) was in the vicinity of the glade again. It walked about a little lot, on foot, since it can not fly. It also had "long sun-dits" like its

allers and is starting to dig. I found the first one lying
 at the glade about 10 o'clock without having been found. When I found
 him worms in some and took them to No. 4, although this one had just
 been found a few minutes before by Brownie, who incidentally on this
 occasion, picked up and dropped a number of large twigs. Brownie
 then went off half hour in going over himself thoroughly and was
 still at it when I left about 10:30. Both adults, especially Brownie
 seem to have something that causes them to scratch almost incessantly,
 whether it is lice on the beginning of the moult I do not know.
 Brownie is evidently very uncomfortable and I should judge would
 now or next time in working on herself with her bill and not trying
 at all doing anything else. In the middle of a feeding or digging op-
 eration she may suddenly stop and either scratch violently or select
 some particular spot and work on it with her bill. The more I observe
 their sunning habits, the more it seems to me that it is associated
 with their skin and feather parasites. On cool days they do not
 sun-fit at all. On uncomfortably hot days they do it the most.
 It certainly appears ^{that} the application of the highest possible
 degree of available radiant heat to the skin is the object sought.
 When the day is so warm that they like to lie on the ground in
 the shade with their bill down and, when walking about drop their
 wings and carry them out from their bodies, that is the time
 they select a good hot spot in full sun and let it warm their backs
 between the fluffed-out feathers and under the unraised wings.
 They do not look as if they enjoyed it, quite the contrary, but I
 know of no way to determine what their sensation is. It is known,
 of course, that extremely high temperatures are destructive of
 insect life. Thus, if I remember correctly, there is a U.S. Forest
 Service bulletin on the effects of heat, in which I think the statement
 is made that the larvae are killed by a temperature of 125 degrees F.
 acting over a certain period of time. This tells no amount of the

Reel # 8
 62-69
 1st 5
 Brownie and
 2nd 5 - both
 69-71
 69-71-72
 Brownie and
 Reel # 6
 1st 5
 Brownie and
 2nd 5 - both
 79-80
 dig some
 2. mutation
 90-91
 Hummingbird
 95-96
 Brownie and
 1st 5
 1st 5 + 3.5
 2nd 5 (both)

in light. I suppose all
it is a matter of
the intensity of light.

On occasions I had noted that when I had left the
bird in the sun for but a few min-
utes while feeding the birds, the worm ^{was} either killed or it
lost temporarily ^{some} of its power of movement. Yesterday I
made a very rough experiment by putting one of the worms on the ground
in the sun. The ground was not unpleasantly warm to the touch. The
worm began to jerk about violently in a few seconds. In the minute
it had turned over on its back, straightened out and was at work.

In 2 minutes only its feet were moving feebly and in 2 min.
I picked it up and put it in the shade. It did not seem
to me I picked it up as there I was usually do. The reason it was
all from the sun at this time was that I could no longer see it.
I held it occasionally and after a time, it moved its
feet lightly. After 5 or 10 minutes it seemed about the same and I
put it to one of the birds, since this was only a rough, qualitative
experiment not made under controlled conditions. At the same time
I noted that the sun's rays have a powerful effect on this particular
ism. The shade temperature 100 feet away, in what was perhaps
a wet spot, was 80° ~~at~~ F. at the time.

4.4
Brownie was out of sight somewhere nearby all of the time
when he did appear, carried no food, but was willing to come
On one occasion he carried it to where I suppose
Brownie was about all of the time when I looked
at the birds, and looked at it. He accompanied her
to the ground and looked at it. He accompanied her
to the ground and looked at it. He accompanied her
to the ground and looked at it.

This is a thrasher call as near as I can get it: "Chew it, Chew it, Chew it, early, early, early, Murphy, Murphy, Chewit Murphy."

At 7:05 P.m. young thrasher No.4 was all alone in the glade. Soon after I entered he began to "yip", and as he was accessible I approached him with a spatula of soft food which he ate greedily.

It has been observed, but not recorded, that this young bird has now the same color of iris as Greenie and the three older juveniles. All three of the second brood were showing this tendency very plainly before they disappeared. To date Brownie is the only thrasher of the eight with the bright orange hue showing in her eyes. It begins to look as if brownish olive might be characteristic of young thrashers, again suggesting that Greenie, himself, is a young bird and that the difference observed in the two adults is due to a difference in age and not a sex difference. (Half-grown quail and their parents eating 8 feet away on the terrace).

July 23rd

About 8:15 Brownie was digging for No. 4 , who was with her, near the north boundary line. No. 4 accepted one mouthful of soft - food from the spatula and then joined his parent.

No further efforts were made to establish contact with this bird today. Brownie came to me several times for worms which she ate herself, showing relaxation of her care for the young. Greenie showed up once or twice, but was not seen to carry food.

July 24 th.

About 8:30 a young thrasher was seen near the glade accompanied by one parent. A display of worms brought the parent to me and it was Greenie. He took one worm from me at a time and carried it to the young bird, taking about a dozen. He ate none himself and was rather shy. The youngster was not identified. On turning toward the house, Brownie was seen at the oval lawn. She came for worms, every one of which she ate herself, topping off with soft-food. The role of the parents on this occasion was the exact reverse of what might have been expected from past observations.

(Nest No.44. A current, ^{upset, but already} used, linnet or purple finch nest in the top of an oak, found while thinning the tree to admit more light to plants below).

11:35. At about 10:30 I went to the glade. No.4 was sunning himself and digging on the outskirts. One of the parents came out of the bushes and pattered around me (I was standing) , preening and digging a little, looking up at me from time to time to see what I was going to do about it, occasionally climbing up into a bush to observe my upper-works from a more advantageous view point and in every way behaving as Brownie does under similar conditions. I got a mild shock when, on wondering how Brownie's tail coverts had grown out again so fast, I happened to notice that the wing tips were being carried low. A look at the eyes showed that it was Greenie, evidently prepared to take

over Brownie's attendance on No.4, her state of mind and her behavior all at the same time. So I sat down on the cushion on the ground and until 11:45, when he went to take a bath, Greenie never left me except to feed No. 4 a few feet (5 to 10) away. During this time his timidity was gradually shed and he was jumping up for proffered worms, digging in the worm box in my hand and picking soft-food from the dish at my knee ^{almost} ~~just~~ as freely as Brownie. He made about 30 trips with worms and about 20 with soft-food to No. 4 and ate no worms himself. His actions differed from Brownie's in that he would take but ^{one} worm at a time, whereas Brownie, unless restrained, might take 20. During all of this time Brownie was absent, although she was seen digging outside the glade when I first entered, disappearing almost at once. Was this a prearranged exchange of duties?

From 12:15 to 12:35 I was in the glade. During this time Greenie was attending to the wants of No.4, with intervals of lying in the sun. Everything he caught or dug up, however small, was taken to the young bird. He ate only soft-food himself, but also fed some of that. No. 4 came out of the bushes to lie alongside his parent and the latter reached over and touched him a few times gently with his bill. Greenie certainly is making a good job of it while his mate is away--wherever she is. †

At 1:30 I went to the glade. Greenie and No. 4 were both there. Greenie very friendly and tame. He caught three yellow-jackets in a few minutes and gave them to No.4, one of them with very little preparation. He caught a fourth and had it in the corner of his mouth when it escaped. Greenie shook his head and scratched the corner of his mouth on the side where the business end of the yellow-jacket had projected and then on the other side. This was repeated. He then came close to me and wiped his bill rather thoroughly on a small log. It looked as if he had been stung, but his reactions did not seem to be violent enough. He did not seem to be uncomfort-

able and was not deterred from going after the very next one that came within reach, although the fact that he missed it entirely may have significance. I have often wondered if these birds were ever stung and what would happen if they were; also whether it may not be possible that they are more or less immune to the effects of a sting. These yellow-jackets are poisonous enough to human beings. I was stung here by one, on the ankle, and my leg was swollen from the knee down for several days and hot to the touch. Thrashers do not appear to treat these insects, when caught, with any more care than any other article on their bill of fare, whereas the local lizards have been seen repeatedly to catch bees and wasps by the head end and rub their tail ends on a rock or on the hard ground, repeating the action several times before swallowing their prey.

I noted for the first time that Greenie likes to scoop out a hole in the ground and lie in it for an indefinite period preening, sunning or just resting. By the time I left at 2:15 he had made two of these, occupying each for several minutes. The first one was in the sun and in this one he stretched out at length with his head lying on the ground. The second one was deeper and in the shade. From a distance of 20 feet only his head and back could be seen. Neither of the thrashers dusts. After No.4 had been fed at intervals by Greenie for about a half hour, he also retired to rest in the shade on the ground; it seems a very dangerous practice.

I am wondering if Brownie's long absence means that a nest has been built and that this is the time for her to make her contribution. If so, I have no idea where it is.

I was in the glade from 3:10 to 4:10. Greenie was there all of the time and so was No.4, but Brownie did not appear once. She has not been seen to feed any young bird today. Greenie kept his charge well fed during this hour, principally with food secured from

me for which he came as freely and familiarly as Brownie. The rest of the food supply was from the food dish and from holes dug in the glade. Some of these holes he lay in for a time as previously noted. No. 4 discovered the drinking vessel and, from his actions, it seemed to be a new experience. The water appeared to fascinate him.

Greenie made a large number of trips carrying food from a very shallow earthen-ware saucer. When this was nearly empty he could get but a grain or two of soft food at a time. He surprised me by lifting it up by one edge and pulling it to a place where one side would remain permanently higher than the other, causing all of the food to pile up at one side where he was then able to get a larger mouthful by reason of the greater depth of food into which he could insert his bill. He acted upon this immediately and the action certainly looked to be deliberately intended to bring about the result actually obtained. While thrashers are constantly turning things over to look underneath them, there was no indication that such was the purpose in this instance, because he did not look at the place uncovered and went at the food as soon as it was shifted into one pile.

About 6:10 I could see no thrashers in the glade from the outside. I called and the bird that came out was Greenie, who took worms into the bushes in the glade. While supplying him, a short phrase thrasher was heard in a tree behind me to the north of the glade. It was Brownie; but she seemed engrossed in something over her head. Nothing unusual could be seen there. I went and stood under the tree and she came down and got a bill full of worms, hesitated as if uncertain what to do with them, then started toward the berry patch. (No. 4 was down in the glade.) She then turned back and carried them up into the tree; but she came down with them shortly, paused to look about in various directions as if trying to get her bearings, then carried them down into the glade, no doubt giving them to No. 4.

The behavior of the adult birds today is puzzling.

July 25th.

At 8:10 a.M' as I passed by the glade, both ^{adult} thrashers could be seen there. Brownie came out for worms readily enough, but was evidently preoccupied, since she would only take two, three and actually left one in my hand, something unheard of. Her preoccupation is in some way connected with shrubs and trees as she seems to be exploring them, exactly as if she were looking for a nesting site. She is talking quite a lot, the "Pit-yurki" motive being, for the time being, frequently used. There is something going on that I do not understand. No.4 was also in the glade.

At 9:10 Greenie and No.4 were at the small lath-house near the berry-patch, Brownie not to be seen. Greenie came to me for most of the necessary food supply, but got an angleworm or two near the gladioli and lilies in the propagating bed. (Lilium Henryi--they are from small bulblets dug out of the garden and planted here as an experiment. Now blooming--some are

Until 10 o'clock, when I left, Greenie was well occupied with his offspring and, for the last few minutes of my stay, the two were keeping up a continuous "conversation" in low tones.

As I returned to the house, Brownie was seen eating at the original thrasher station at the oval lawn, but came to me readily on invitation, loitering about as if she had no cares at all--which may be the case. Although she inspected the sky pretty carefully and also the tree overhead, she appeared to have abandoned her previous preoccupation.

At 11:30 Greenie was still taking the part of the devoted parent. At 12:30--ditto. At this time No.4 was inside of a low enclosure of chicken wire surrounding some plants in the propagating bed. He did not think he could get out and as it was a very comfort-

able place, he was not frightened, and Greenie was looking out for him I did not intervene. Greenie first tried feeding him through the wire, which he was able to do with some difficulty, and then crawled under the screen thereafter. The young bird could not fathom the mystery, so I went of and left them.

At about 1:30 he was still inside but not worrying much although he tried to get out occasionally. Greenie soon came. I raised the bottom of the wire so that he would not have to scrape his back in going through the opening and so that the young bird could get out easier. This he was able to understand, so walked out calmly. It is strange how most birds will not look downward for an opening through which to escape from a room or other enclosed space.

At 2:50 both birds had shifted to the glade. Brownie was in the vicinity of nest No.4 "scripping". On going there, no cause for excitement could be seen, although she had gathered a small audience of other birds. On seeing me under the tree where she was sitting, she worked her way down through the branches to a point about 2 feet directly over my head, picked some sort of caterpillar off of the branch, flew to the ground and ate it herself.

During the rest of the afternoon all food given to her was eaten by her and not fed to the young bird. All worms given to Greenie were fed to No.4. He ate soft-food himself and also fed it to the young bird.

July 26th.

At 7:30 A.M. there were no thrashers in sight as I entered the glade, however No.4 could be heard and Greenie soon poked his head out through the leaves near the top of an oak, considered for a time what was best to be done next and then flew down to me for worms, which he took to No.4. Up to 8:10 nothing was seen of Brownie, at which time I went indoors. It will be seen that, since day before yesterday, the general activities of the two adults have been almost

completely reversed--at least inside my property lines. What goes on outside, I do not know. Greenie has been doing Brownie's work and Brownie appears to be doing whatever it was that Greenie was doing before.

Up to 12:30 Brownie had not been seen and at that time Greenie was still taking food to No.4.

The pictures of Roll No. 8, unfortunately, were fuzzy in appearance, due, presumably to the loop in the film on one side of the gate being too small, thus interfering with the smooth passage of the film by the gate and blurring the image.

At about 1:45, it being rather too warm in the glade, I sat on the ground under a tree on the western margin where there was a little breeze. Greenie soon came for worms and disclosed No.4 lying down in a hedge about 15 feet away. After the young one was well fed, Greenie dug a small stone out of a sloping pathway at a point about 7 feet from me, thus making a small bench on which he stretched out and rested for about thirty minutes by the watch. During this time he closed his eyes frequently and evidently napped, occasionally with the tip of his bill on the ground. This habit of dozing on the ground in broad day-light must result in frequent tragedies, if this is a common habit of thrashers in general. All of "my" birds have done it, and as I have noted before, the impression has been gained that they are not noticeably more acute of hearing than human beings--or, more specifically--than I am. Consequently it seems that they should be easy victims for predatory animals, such, for example as domestic cats.

At 2:40 I was wondering what had become of Brownie and whether the thrashers would begin singing again after their domestic cares are over. As I approached the oval lawn a thrasher undersong was heard and Brownie was located in an oak nearby, in plain sight, as the

singer. She was indifferent to my presence, so I decided to time her. She sat about 20 feet away, so it was possible to hear the slightest phrase. The song, produced with bill closed, lasted continuously for $18\frac{1}{2}$ minutes, except for four interruptions, none lasting as long as ten seconds. Two were caused by the need for a short preening, one by an attempt to catch an insect buzzing around her and one by the flight of some small birds just over her head which startled her. In this undersong she introduced phrases reminiscent of the King bird and the Flicker. She stopped to get food at the thrasher stand and came to me only on invitation. The necessity for feeding young being now less pressing it is reasonable to expect that the adult birds will approach me less often. (Brownie has resumed her undersong).

Brownie stayed in the vicinity of the oval lawn all the rest of the afternoon --or, rather she was there every time I saw or heard her. Greenie, on the other hand, remained in the vicinity of the glade faithfully attending No.4. I can not understand what has come over him. When I am there he acts just as Brownie has been doing; Brownie now being the standoffish one, while he hangs around casting sheep's eyes at me. Of course I know it is because the feeding job has, by some hocus-pocus, been palmed off on him --how I do not know--and he does not intend to dig in the sun-baked earth if he can help it. His digging when I am around is the merest pretence and it is easy to see that he is just waiting for the whistle to blow. +

8 P.M. Cat No.7 has just been permanently delivered from all temptation arising in connection with the careless resting habits of thrashers. It seems strange that not one of Brood No.1 has ever been seen again, even momentarily, since the last record of its appearance was made and now that ~~but~~ one young one of Brood No. 2 seems to be the only one being fed and two cats have been seen today--the first in a long time--I fear that something may have happened to them .

July 27th.

At 7:15 A.M. Greenie and No.4 were in the glade . No.4 came to me of his own volition and opened his mouth, but backed off when I tried to feed him.

About 9 o'clock, while looking for cats, the Spotted Towhees showed me one, by their cries. I could not get it. A few minutes later I saw another, also ungettable. It is worse than I thought. The first cat was after a young towhee.

About 10 o'clock Brownie was in the berry patch and came to me for worms.

At 10:40, while sitting in the glade, no thrashers in sight, I shot a rabbit outside the glade. Greenie, coming from some place out of sight, reached the rabbit before I did and was circling about it scripping. He calmed down at once and forgot all about the rabbit when I offered worms. This is the first performance of ^{the} ~~this~~ kind for Greenie. Brownie, as these notes record, has reacted in the same way toward a squirrel, a rabbit and a jay. No other birds here have shown any interest in slain animals. It seems to be a thrasher characteristic, now that Greenie's behavior shows that it is not peculiar to Brownie.

(Nest No.45. A Brown Towhee nest containing three eggs in an oak near the S.W. --found by accident while training ivy nearby. One adult was on the nest when found. The material of the nest reflects the lateness of the season, being made of the stalks of recently dried out weeds. (Star Thistle?). This is the tenth Brown towhee nest this year within the property lines. Another one just outside, but belonging to residents, is not included).

Greenie continued to feed No.4 throughout the rest of the day, Brownie, when seen, seeming to be looking out for herself and eating all worms offered her.

A Yellow-bellied Racer was caught in the lath-house and put

in a cage temporarily . An attempt will be made to get a picture to replace the one with the gopher snake. This racer, when caught, struck viciously at the slightest movement on my part, but I do not think he can do any damage.

July 27th.

At 7:15 Brownie, Greenie and No.4 were all accounted for. Brownie foraging for herself, Greenie for No.4.

About 9:30 Mr. Sampson brought some cut-worms and some beetles that look somewhat like squash bugs and somewhat like very large weevils. We wanted to see whether thrashers would eat these garden pests. The cut-worms looked like small "Thousand-leggers". We went to the glade and found Greenie and No.4 both there. Greenie took meal worms both from the hand and when tossed to him, which he fed to the young bird, but when cut-worms or beetles were offered by either method the most he would do was to turn them over--in the case of the worms--and the beetles he would take from the hand, carry a little distance, hammer on the ground and then abandon. This was at first, but when he got so that he could recognize them at a glance, he paid no further attention to them, but would come readily enough for meal worms. It is, of course, possible that he would have eaten ^{the others} ~~them~~ if it had not been for the meal worms.

Roll 9. At about 10 various flashes of Greenie and No. 4 were taken in the glade with a Kodak movie camera using a ^{20 mm.} f/3.5 lens. Distances ranged from 5 feet to 10, stops from f8 to f3.4 and light from full sun to full shade. Footage 14 feet. (From 50 to 36--this index shows feet remaining and not feet taken). From 36 down to 10, 26' mostly Brownie and the yellow-bellied racer, some of Greenie on the lawn and a ^{ov}flsh of a green-backed goldfinch in Henry lily.

Brownie was not very keen about attacking the snake, but the snake made one good pass at her, which she dodged. She did not peck at him until the camera ran down, so I missed that part. Mostly she

circled about him alertly and it was only when he turned tail and fled that she pursued. Thus she followed him about 150 feet, most of the time under bushes and shrubs, the two appearing in the open only at intervals and briefly. The start was on the oval lawn and the finish by mutual consent near the fig tree, where Brownie stopped to dig and the snake moved on to the glade. There were several skirmishes along the route --one especially spirited one under a grape vine on a bank--where I think Greenie took a hand, but am not sure. Anyway the procession passed both him and NO.4 at one point. None of the thrashers followed him out into the open space which he had to cross in order to enter the glade, being apparently satisfied to get him out of the territory which they were occupying at the time, which was entirely outside of the glade. When last seen, the snake had crawled up into an old man sage and was resting there quietly. This snake when irritated would strike at anything--even the empty air--and could vibrate its tail quite convincingly, especially when in such a position that its tail would strike some object at each end of its swing, such for example, as ^{an} ~~the~~ inside corner of a box. The sound produced, while unlike that made by the rattlesnake in quality of tone was suggestive enough to make one look at both ends carefully--and everything in between--before handling him, although there is not the slightest resemblance between the two kinds of snakes in form or color.

July 29th.

At 8:00A.M. Brownie, Greenie and No. 4 were all at the oval lawn. Brownie and Greenie came for worms, the former for her own consumption and the latter to feed No.4. Strange how the adults have reversed their usual roles. Brownie is looking pretty shabby and there are numerous places in her coat where feathers are either displaced or missing, showing the under-down, which looks almost blue by contrast. She practiced her undersong at times yesterday and

9:20 A.M. Took panorama, with the last ten feet of film, of the vicinity of the oval lawn. 20 mm. lens set at f8, 25 ft. Greenie and No.4 were in the picture on the far side of the lawn. No.4 lying down in the sun.

11:30. No further observations in the interim. All three birds at or near the oval lawn. Brownie indifferent, but Greenie began "scripping" when he saw me and gradually worked up ^{along} ~~through~~ the branches of an oak from the lower ground until he could reach the worm I offered, now and then introducing into his monologue a "Pit-yurki" or two in a meek inquiring tone. Brownie, now 75 feet away and digging, kept posted as to what was going on, but showed no further interest. Greenie fed No.4. who was sitting in a pyracantha nearby.

12:40 I have just finished a thirty minute search for the cause of the adult thrashers' concern without success. Both of them began scripping loudly in the bushes surrounding the oval lawn, sometimes both birds at the same place and sometimes 50 feet apart. The young bird sat placidly throughout.

1:00 They are still keeping it up. This is unprecedented. I shall make another armed search.

1:04 $\frac{1}{2}$!!! Got 'im!' A black cat, eating out of the thrashers' soft food dish. True to form the thrashers held an inquest. They did not fly when I shot and the scripping has ceased. No.4 had been sleeping on the ground a few hours before a couple of feet from this spot. I believe that the disappearance of No's 5 and 6 is undoubtedly due to cats.

³⁰
July 27th.

8:30 A.M. At 5:30 A.M. a thrasher was singing near the oval lawn--nearly full song. This is the third morning in succession at about the same time. At 7 o'clock all three birds were at the lawn. At 8 o'clock, Julio reported three skunks in the tool house when he

went there to open up. He decided to leave the door closed a little longer, so I suppose that they are still there. I looked in the window, but could not see them and deferred action until I can think about it a little more. At 8:30 Greenie was feeding No.4 at the oval lawn.

2:30 Greenie and NO.4 still at the oval lawn, Brownie in the glade came for worms. She is getting very ragged.

((The skunks were under some stairs in the tool-house (I saw only one with certainty). I ran a short piece of hose under the stairway, and tied the other end to a column, put a funnel in the end about 6 feet above the floor, then poured down it one pound of carbon disulphide after seeing that all doors leading to the outside were closed--also all windows. A few minutes afterwards, one of the skunks was seen trying to crawl up a scantling to get out of the vapor (which is heavier than air and formed a blanket over the floor of unknown depth). It could not do it and disappeared beneath some sacks. About 2 o'clock I turned a flash-light beam under the stairs revealing a motionless skunk. Prodding with a bamboo brought no reaction. I pulled it out and it began to move its fore-paws after lying in the open air a few minutes, so I despatched it. Nothing was seen of the others. If there they will^{probably} be under the sacks. There is no skunk odor about the place at all.

4:30 The second skunk was found still living, so that it had to be killed. This was not a neat performance.

5:20 The third one was found dead. None of them had moved more than a foot or two from the points where they were last seen fully alive. The method worked well and would have been entirely odorless (except for the carbon disulphide) with the exercise of a little more care. As it was, only one victim gave off any odor and that was probably an involuntary act.))

Greenie and his charge spent most of the day near the oval lawn,

Brownie nearly all the time in the glade. There is now doubt about her moulting.

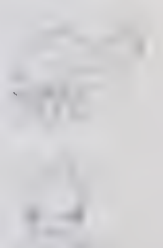
July 31st.

The territories occupied by the birds during the day were the same as yesterday, Greenie being the only one to feed No.4. Neither adult has been seen to leave the grounds to forage for some days. Brownie at 4:30 P.M. is still in the glade, where she spends most of her time in the low bushes working on her feathers. When I went in at about four she ran to me at once singing her undersong, and jumped up into my lap to get both worms and soft food. When she got down she dug about within a few feet and sang her undersong with such intensity as make it almost full song. She then came and lay down in front of me, just 2 feet from my feet, and sang continuously for 20 minutes. (Estimated). It was still singing with the beak closed, but it required a lot of muscular effort just the same. Her breast being on the ground (also her tail) she bounced up and down in a comical way, and was so much in earnest about it and so intent on doing nothing but sing, that it kept me chuckling to myself throughout the whole performance. Toward the finish it was necessary to do a first class sun-fit, but the spirit of song was so strong that she continued fragmentary snatches throughout the seizure. Next five or six minutes were spent in a thorough going over, during which pin feathers were quite plainly to be seen on the wings. After this another sun-fit partly under my chair, up to my lap for one worm, then into the sage for some more sub-song. For a bird that is moulting she seems surprisingly happy. Query: Why did she come and sing at my feet? She did not want food, and she was not called.

August 1st.

At 8:25 A.M. No.4 was the only thrasher in sight, eating out of a dish at the oval lawn, like a veteran. A 25 minute search

failed to reveal the presence of either adult and calling brought no response of any kind. On passing by the oval lawn at 8:55, Greenie was seen feeding No.4 with soft food from the very dish from which the youngster had just been eating without assistance a half hour before.

10:45. It was not until this time that Brownie appeared-- in the glade--very quiet and subdued. She came for worms and uttered no sound whatever. New feathers are sprouting in her tail also. Greenie and No.4 are feeding on the lawn. On coming for a worm, Greenie dropped a fly-like creature that looked somewhat like this:

He picks them out of the grass. He is also moulting, but has not reached the stage that Brownie has. New feathers are showing in his wings, but as he still has his tail coverts, no new feathers can be seen in his tail.

Some time during the day the birds changed their headquarters, Brownie staying at the lawn and Greenie with his charge going to the glade.

August 2nd.

At 8:15 A.M. Brownie was at the oval lawn singing and eating. Greenie and No.4 were in the glade. The latter no longer shows the scratch on its forehead, but presumably due to the same cause, has a long white mark along the top of the upper mandible. No.4 approached me as soon as Greenie did, but took his food from the latter.

About 10 o'clock as I passed by the south side of the glade, Brownie came for worms and then went off about 50 feet to dig and preen. Greenie and No.4 then came out of the glade for their share. This grouping of the birds has been the typical one during the past few days, there being no mixing of the three birds at all. They do not even seem to notice each other--except, of course, Greenie and No. 4. (This bird was christened Snooty when first out of the nest in

order to distinguish him from his fellows and as his "nose" mark is even more conspicuous now, while his actions are also somewhat "snooty" (the name is appropriate). Greenie fed Snooty with worms and then went off to dig. I showed a worm to Snooty and he gradually came to within about a foot of my hand; apparently not afraid, but uninformed. I dropped the worm in front of him and he pushed it around with his bill, turning it over and over, without seeming to be sure that it was supposed to be eaten. Finally he picked it up and carried it about without making any visible effort to swallow it, at the same time giving the impression that he was looking for another bird to whom to feed it. He then saw Greenie, now about fifteen feet away, ran to him, stood facing him a few inches away, whereupon Greenie reached forward, took the worm, tapped it a few times on the ground and then pushed it down Snooty's throat. Snooty had opened his mouth for it as soon as Greenie took it from him. It looks as if this young bird had not definitely learned to associate a worm on the ground with food and on picking it up tentatively was either uncertain as to whether it should be swallowed or had not learned the manipulations necessary to get it from the tip of his beak and headed in the right direction. Greenie clearly was the proper authority to whom to appeal in this dilemma, since anything offered by Greenie is something to open up for to the fullest extent. This may be the anthropomorphic point of view; doubtless an exact explanation can be formulated on the basis of associations and reflexes. In the light of this incident where a worm is taken to a parent, the explanation of the young thrashers of brood No.1 taking worms to each other, may be different than at first conjectured in these notes. Apparently a worm in the bill of another bird is worth two on the ground if one is young enough.

3:40 P.M. At about 2:40 as I paused on the path by the south side of the glade, looking for cats, squirrels and rabbits, a thrasher call sounded from within and Brownie came out. I laid the gun on the bank and Brownie trotted up to it, put her eye close to the muzzle and tried to look down the barrel, but seeing nothing edible there, came and had some soft food. I then went into the glade and sat down. Brownie followed, mounted a horizontal limb of an Old Man sage, about one foot above the ground, preened for several minutes, then settled comfortably on the limb, closed her eyes and sang softly at intervals with her eyes still closed. Soon Greenie entered from the north and when Brownie heard him coming she gave the "Repeat, you repeat" call and he ran to her opening his bill, Brownie likewise opened her bill, but neither made any sound. I have not seen them together for some time and was curious to see whether there might be some antagonism shown by one or the other. At first it seemed as if there might be some, as Brownie jumped down and retreated a couple of feet, Greenie following; but both then came to the food dish about four feet from me and ate at the same time. This was new. Brownie soon had a "sun-fit" right by the side of Greenie and the dish. This seemed a good opportunity for Greenie to get in one effective peck if he felt like it, but he started a "fit" himself; not so elaborate as Brownie's, for in the midst of it, he was sufficiently aware of things to reach over frequently and get a mouthful of food. After this both went off in opposite directions, but Snooty came in shortly and occupied the perch on which Brownie had been napping. He was soon followed by Greenie, who got a worm from me to give to Snooty, both occupying the perch side by side quietly for some moments; then Snooty reached over and touched Greenie on the wing and was repulsed gently, Greenie jumping down. They then exchanged places, the young bird looking up with open mouth but not quivering its wings or making any sound. Greenie merely looked at him. I then attracted Greenie's attention with a worm

to see if he intended to do any more feeding, and he came promptly, took it to the young bird and rammed it down its throat. He did this with several more, then retired four feet to my right and sunned himself. The young bird then came to the food dish in front of me and ate, then sat on the water dish playing with the bubbles and drinking for several minutes, after having a "sun-fit". While he fussed with the water a purple finch came and sprawled out into a prolonged sun-fit only one foot behind him. Snooty looked at him, but ignored him for some time finally turning and going toward the finch quickly. The finch flew off and Snooty examined the ground carefully where it had been. He seemed to be actuated only by curiosity. In the meantime Greenie had left, going in the direction from which Brownie's under-song could be heard. Snooty retired to the same branch as before and preened.

I had a good opportunity to compare Greenie and Snooty. Their eyes appear identical in color. If all young birds resemble the females in their first year in all outward respects, then Greenie would have to be the female after all, as all six young birds had his eye color after leaving the nest or were approximating it. As to plumage, both adults and all six young are ceratinly alike. Any differences are exceedingly minute.

As both adults are moulting and there are no further signs of nesting activities, undoubtedly the present brood is the last for the season. Brownie's picking up of twigs and searching for nesting sites probably was an automatic following^{up} of an instinctive line of behavior ---if there is any such thing---and failure to complete the programme doubtless is attributable to waning of the reproductive instinct in one or both birds as a consequence of seasonal change in the reproductive organs.

August 3rd.

At 8:00 A.M. Brownie was at the oval lawn practising sing-

ing, but perfectly willing to postpone her exercises in view of the worms offered with which to top off her meal of soft food.

Greenie and Snooty were in the glade. Greenie was very hungry and , between trips carrying worms to his offspring, ate soft-food himself. It is singular how these birds discriminate between food for themselves and food for the young. Thus, as on the present occasion, even though hungry, a parent will practically never eat a meal-worm itself as long as there are young to be fed. Brownie is eating them whenever they are offered, but she is doing no feeding at all. Greenie, when he has finished feeding Snooty, will not come for another worm except rarely. The "last worm" of this morning's feeding seems to have been one of those exceptions; but caused, apparently, by an error on Greenie's part. Often when making regular trips between my hand and the young bird being fed, Greenie will over-run the youngster entirely, often as much as 8 or 10 feet, even though he may have passed by him only a matter of inches. This happens even when the young bird has not stirred from the exact spot which it occupied when last fed but a few seconds before. I have often wondered at this phenomenon, not knowing whether to attribute it to faulty sense of location, poor eye-sight, over eagerness, protective coloration of the young bird or operation of that reflex in the chain of actions associated with the feeding of the young which impels him to carry food to more than one bird, even though there may be no other bird to be fed. Thus normally, the brood consists of three young. In this instance, two of them, as far as my own perceptions are concerned, are no longer in existence, but the impelling force which governs the acts of the parent, notwithstanding that he must know that there is only one young bird to be fed, steps in when he is off guard--so to speak--and sends him off on a fruitless errand. The "last worm" this morning was carried toward a Brown Towhee in almost the opposite direction from Snooty (illustrating another common error of the

parents), but when it was seen that this bird was not a young thrasher, Greenie kept on running rapidly, still carrying the worm I think, for a hundred and fifty feet further until he disappeared in a line of trees along the north boundary. There he began to "scrip" and, when I approached, came out with no worm and commenced digging. It looked as if he might have had another youngster there, but I doubt it. The trees and the ground under them, however, were "full" of quail of all ages as well as towhees, plainly visible from a distance, so perhaps he might have thought to find one of his own offspring amongst them. On being disappointed, he probably swallowed the worm himself.

About 11:30 I went to the glade. Snooty was there all alone. Soon Brownie came up behind my chair--I could hear her walking through the leaves on the ground before turning to look. When she saw Snooty she ignored him, but when he ran toward her confidently, she rushed at him, knocked him flat on his back with feet in the air, trampled on him and made threatening pecking gestures, then came to me for worms all of which she ate herself. Snooty clearly did not understand what the attack meant. He did not appear at all frightened and did not retreat. I believe this was actually the first attack because he showed no fear of her when she threatened him a second time, but the third time he assumed a defensive attitude, crouching low with bill open ~~and~~ watching Brownie warily. I had hoped that Greenie would show up so that I could see which side of the fence he would take; but he came only when a quail's alarm note was sounded at the other side of the glade. This note is usually ignored by the thrashers, but both Brownie and Snooty flew up into the tree under which I was sitting and Greenie also flew into the same tree from the opposite direction at almost the same instant, paused a moment, then entered the bushes from which the alarm sounded. While there he scripped a few times, and all was quiet. Brownie and Snooty continued to sit in the tree about four feet apart. Snooty comfortably, as he had just had some worms

which I had tossed to him and which he now recognizes as food and can handle himself, but Brownie evidently not happy. She was trying to balance one foot on a slender, moving twig and was pecking peevishly at leaves and twigs that interfered with her comfort. It is curious how thrashers, instead of moving away to avoid inconveniences of this sort, often try to remove or destroy them when a side-step or two would gain the same end.

5:30 P.M. Brownie and Greenie have been in the glade several times this afternoon at the same time and I have watched them pretty closely for evidences of any restraint in their relations, either arising from the difference in their present policies as regards Snooty, or for other reasons; but there is no sign of change. Twice again they have come from different directions and eaten from the same dish and two or three times one or the other has left the glade to join its mate digging outside at the time. On such occasions they exchanged remarks in low tones and opened their beaks at each other as before. Brownie has not, however, attacked Snooty in Greenie's presence as far as I know. Three times she rushed at Snooty this afternoon, each time stopping just short of him. Each time he held his ground prepared to defend himself. On one occasion when he was coming for a worm tossed to him, Brownie suddenly appeared and snatched it within an inch or two of his bill. Later I tried this when Greenie was present and Brownie away. Greenie each time got the worm first, but each time gave it to the youngster. The present situation is that he expects attacks from Brownie and food from Greenie. He has learned Brownie's attitude toward him since 11:30 this morning. He now runs toward me for worms tossed to him eagerly and understands how to handle them. This he has learned since yesterday at about 10 o'clock, although I have tossed worms to him only two or three times since then. The first worm I gave him today,

he was doubtful about, but finally picked it up and held it in his bill for perhaps a minute while he looked all around and made the clucking call which the parents make when trying to get the attention of a young bird while standing over it in the nest. Finally, as there was nobody to take the worm from him and give it back to him, he had to answer his own call by swallowing the worm himself. Here were characteristic actions of parent and young all mixed up together!

About 5:30, Brownie and Greenie both being engaged in digging outside the glade, but in plain view, an elementary thrasher under-
place to which
song was heard from the bushes at a ~~point where~~ Snooty had just gone, probably about ten feet away. I could not see him, but think this was an effort of his. He has now been out of the nest about 17 days and is approximately the same age as that of the young thrashers of
they were
Brood No.1 when ~~it was~~ first heard to sing. He would be very easy to tame--in fact would tame himself--if the parents would permit.

August 4th.

8:20 A.M. Greenie was feeding Snooty at the oval lawn. About 5 minutes after entering the glade Brownie arrived looking pretty disreputable. She has about 4 long feathers ^{remaining} in her tail and the new ones at the base are now showing fan-shaped vanes at the ends. They look like small, flat paint brushes with quill stems. Her wing coverts are coming along fast. Her body feathers are very much disheveled with lots of thin places. When she preens light feathers float off in the air. Although she looks glum and disconsolate she remains friendly. Greenie is also rough looking, but not so far gone as his mate. He is very faithful to his charge, still doing all the feeding, which as these notes show is a reversal of ^{his} behavior toward the first brood at the same stage of development. Whichever adult is the male or the female, it will be ^{seen} clear that there is no evidence pointing to any difference in the attitude of the sexes toward the young, when both broods are taken into consideration, owing to this

reversal of form---at this time.

At about 10:45 I entered the glade. Snooty was the only visible occupant and showed immediate interest in my presence, approaching me slowly from a distance of about 15 feet, although I did not attempt to entice him until he was about four feet away. Then I showed him a worm which he came and took out of my hand, also taking the same exploratory nibble at my fingers that all of his predecessors have thought advisable on coming to hand for the first time. After taking a couple more, he retired to my right and lay down 3 feet away. Brownie then appeared silently near my left elbow and instead of taking after Snooty as I expected, although she saw him, very meekly ate soft-food and a worm or two without even making a threat of violence, then retired somewhere outside the glade, presumably to preen, doze and feel sorry for herself. Greenie came next to eat from the fresh batch of soft-food and give a worm or two to Snooty. They then both retired to the south opening into the glade, where Snooty napped on the ground. Greenie sat on a sage branch only six inches above the ground, pried out a few loose feathers, then settled down on the branch also for a nap. This in broad daylight, with nothing but the sky over him and in full view---a perfect lure for cats, hawks or any other predatory creatures. In a few minutes a lizard appeared between the two birds, who were about three feet apart, and settled himself comfortably for a sun-bath. Snooty saw him first and approached him carefully with erected tail and slightly spread wings. The lizard merely edged away slowly, Snooty following. When Greenie saw what was going on he joined Snooty without haste or theatrical posing and both of them followed the lizard around a bush, apparently out of mere curiosity. Greenie went back to his same perch, Snooty stretched out on the ground and the lizard remained a member of the group for an indefinite ^{period} ~~time~~, not having moved quickly at any time. Everything

seemed perfectly friendly, although the lizard--which probably was too big to eat--preferred not to be approached too closely .

Neither bird showed any signs of hunger for almost exactly a half an hour. At that time they ate a little and Snooty developed a fly and bee chasing taste. Greenie, incidentally, is becoming a scourge to the yellow-jackets .

Those same flat flies that I noticed crawling under the feathers of the young birds of brood No. 1 are doing the same to Snooty, though he does not seem to mind it.

August 5th.

At 7 A.M. Brownie on the lawn. At 7:30, Greenie and Snooty entered the glade, Greenie carrying worms to the youngster. When Greenie left Snooty--as has been the case for several days--the latter showed no concern and did not attempt to follow , but he watched the old bird disappear. I tossed him a worm, which he again carried about, using the parental chuckle, for perhaps two minutes, apparently looking for some bird to put it down his throat. He looked up into the tree where Greenie had been last seen, ran toward a song sparrow with which he had been attempting to play hide-and-seek a few minutes before, also toward a young spotted towhee and gazed at a robin in the top of the old oak. At last he stopped running about, stood for a time facing me and then swallowed the worm. I think there is little doubt but that he derives more satisfaction from having food pushed down his gullet than from swallowing it himself. After this ~~thexwormsxixtossxxhim~~ first worm, the others I tossed him were swallowed without more ado and with no chuckling. After tossing three to him I merely showed him worms in my hand, one at a time, and he came and took them in a matter of fact way.

Not having any brothers and sisters available for his sport, Snooty tries to get other birds in the glade to join in his games,

but they are indifferent to his invitations.

About 2:30 Brownie and Greenie were digging and sunning near each other in the glade. In a few minutes Snooty came out of the bushes toward me and as he paused I tossed him a worm which Brownie saw and ran to get, but Snooty advanced toward her threateningly and she backed off. Snooty did not get the worm but remained on guard. Brownie then made four or five dashes at the worm, stopping short each time as Snooty repeated his previous tactics. Brownie then retired to a point about 6 feet to Snooty's flank. He advanced about 2 feet toward her as if to deliver an attack and she flew in his face two or three times without striking, Snooty standing firm each time, evidently without fear, or at least, without giving way to fear, and having the bearing of one who has the utmost confidence in his own prowess. It is quite clear that Brownie has not really attacked him in earnest as yet, judging by observations made on the other brood otherwise he would flee in panic. The time for serious action has evidently not arrived. Greenie saw some of these affairs and stood watching some of them, moving up nearer apparently in order to see better. He was then about four feet from me and Snooty about six. Brownie retired to a foot or so from Greenie, Greenie backing away slightly and they interchanged some uninterpretable comments. Snooty, in the illusion that he had won, proceeded to pick up the worms without interference. For a time the three birds did not move from their places and it appeared to me that there was an atmosphere of tension prevailing. There was a stick on the ground at one end of which Snooty was standing. Brownie went to the other end of the stick and began pecking it. Snooty, seeing his end move about, also pecked it. When his end, as a result of Brownie's efforts, rose into the air, he put his head under it to examine the hole in the ground there. When Brownie pecked again the stick hit Snooty on the head and he drew back and gave it a powerful blow, angrily, knocking it about six inches

This ended the episode. Brownie came and got a worm, Greenie went off and sunned himself and Snooty came to me for food, without interference from Brownie. A few minutes afterwards Greenie got a worm from me and ate it himself. I offered him more, but he would not take any, although Snooty was near at hand and in a receptive mood. This looks as if Greenie thinks that the time has come to put the youngster on his own resources. Later, probably he will start a drive on him and if precedent is followed, Snooty is in for some severe treatment with loss of feathers and morale.

I did not go to the glade again until about 4:30. No thrashers in sight. Brownie came first from some place outside and behind me. Snooty came from the bushes in front of me and halted when he saw his parent. She did not threaten him, but retired after having some food. He then came to me, taking worms from my hand, then doing a lot of digging which would have been creditable to either parent. I remained there a half hour, but Greenie did not appear. A continuous thrasher sub-song was heard from some place behind me while I was in the glade.

I went to the glade at 5:55 and left at 6:15. No thrashers. Brownie came from behind and outside--very hungry. Snooty from in front stopping as before when he saw Brownie. She did not see him at first, but when she did, rushed at him, stopping a foot away, both birds crouching and confronting each other with open bills. When I called she came and hung around me until I would give her no more worms--and for several minutes after--Snooty remaining fixed in position. Once Brownie ran up to him with a worm as if about to feed him, then off again, back once more and finally off into the bushes still carrying the worm. When she disappeared, Snooty came promptly for his share, which he got. Brownie saw this from the bushes and ran out to get one which he was about to take from my hand, but a quick gesture caused her to leave him in peace. Greenie then came,

got two worms, giving both to the young bird, then retired. Evidently he does not believe in withholding food entirely.

The situation at present is then; Brownie will not feed and makes attacks which are mostly sham, but does not always attack. Greenie does not attack, but apparently does not object to Brownie's doing so enough to make an issue of it, though not at ease when he sees what is going on. He still feeds, but less often.

If this young bird, who now acts as if he now realizes me to be the most reliable present source of food, is to be chased away--and it looks as if that would be the final result--this is the critical time and in the next day or two he will become a much disillusioned youngster. With no other brood on the way and plenty of room for one more, it does not seem like a square deal. Last time it was Greenie that began the sham attacks and Brownie that made them painfully real. This time, as Brownie has been making the feints it remains to be seen if her consort will follow up with actual blows.

August 6th.

(At 7:45 A.M. a young Screech Owl, apparently killed by striking the window was picked up ten feet from this spot).

At the same time Greenie was feeding Snooty at the oval lawn. He was seen to feed one small grey slug, the first I have seen eaten by a bird of any kind. A large yellow slug which he frequently passed by a few inches was not given any attention. Brownie was nowhere in sight.

At 1 P.M. I fed all three thrashers at the oval lawn. Brownie ate all she took. Greenie gave all of his to Snooty, besides which Snooty got some for himself.

At 1:15 Brownie came into the glade. For the next hour and twentyfive minutes she was never more than ten feet away from me. For the first 45 minutes she sang continuously with no interruption of more than ten seconds and there were not more than two of these.

(It will be remembered that the thrasher can and does ^{often} continue its undersong while engaged in other activities). She caught yellow-jackets, dug, and pulled "dandruff" off of the stems of her new tail feathers. Most of the time she was sitting quietly giving all of her attention to the song. It was her sub-song, plainly audible at 50 feet (I used Julio to check this) and probably to be heard as far off as 100 feet by careful concentration; but this is a guess.

For 5 minutes (approx.) of the time she sat 4 feet ~~feet~~ from my left ear and on a level with it, singing continuously. She then settled down for a nap in the same place for another 5 minutes, occasionally bubbling and talking with her eyes closed. All of her actions were without any hints or inducements offered by me and she did not come to me for food. She seemed very happy. At the end of 50 minutes I called her to me for worms. She sat on my bare arm, gripping it with her sharp claws, but could not stick there long, sliding off into my lap, looking me over curiously, finally dropping to the ground to continue as before. At the end of the hour and twenty five minutes, she heard footsteps on the road north of the glade, stopped singing, ran into the bushes and sneaked up the bank through them toward the sound with tail slightly spread, very much on the alert, crouched low to the ground, ~~and~~ peering underneath the branches. She saw that it was Julio, came out into the open at once apparently satisfied that everything was all right, trotted over to me for the worms which I offered her as a reward for her vigilance and when I left was again singing her undersong. She seems to be over the itching stage of her moult, for, today at any rate, she is bright and cheerful.

3:20 I have seen no chasing of Snooty today, though the three birds have been in the same general vicinity of each other in the open more than once. Once Snooty ran to Greenie with a worm, I now suppose for help in swallowing it, but Greenie had one also that he wanted to give the young bird. This created a problem.

as was evident from their hesitation before acting. Greenie reached forward to take hold of Snooty's worm, but Snooty could not get his mind disentangled in such a complicated situation, so wouldn't let go, doubtless believing that, in such a serious emergency as this, it is best not to do anything until the good old bean begins to function properly and throw ^{a beam of} light into the obscurity. Finally overawed by the mathematics of it, he opened his beak and when Greenie pushed the worm which he brought down Snooty's gullet, Snooty's worm went down too.

At 5:15 Snooty was standing in the walk to the S.E. of the glade about 40 feet from me, Brownie digging about 5 or 6 feet from him. Greenie nowhere about and everything peaceful. Snooty came to me for worms --40 feet is a record for him. Brownie followed. Both took worms alternately from my hand. Then Brownie made a pass at Snooty and jumped over his head and he chased her for about 2 feet. He doesn't know yet what may be in store for him.

At 6:15 Dr. Reynolds, Mr. Brock and his son dropped in. We went to the glade--nothing in sight. Soon, however, Snooty came out and took worms from ^{my hand} ~~me~~ in the presence of three visitors--another record for him.--I did not expect him to come at all, as he never been in the presence of more than one person at a time and he has only just started coming to me. A few minutes afterwards, Brownie and Greenie were both seen and heard scripping about something by the fence along the north line and then a third thrasher was seen with them. I think it was Snooty, as I saw him start in that direction, although some of my visitors thought it was another adult. However, they had never seen Snooty until only a few minutes before and might easily be deceived especially as these birds pass very quickly and quietly from place to place in an unexpected way. Although I did not think the excitement meant the presence of a dangerous enemy--otherwise the birds would not have been on the ground--I went to get a gun in deference to a suggestion, and when I returned the birds had been dispersed, one

being seen darting along the fence at the south boundary . This gave rise to the impression that the place was full of thrashers, but I do not think that more than three were seen at one time and possibly only two. Brownie alone can easily look like two birds. For example, she had just been with me on one occasion in the glade, today, as close as this sheet of paper. When she jumped down I went at once to the oval lawn to see where Greenie and the youngbird were and there was Brownie already comfortably ensconced on a branch preening as if she had been there an hour. It is easy to get these birds confused with each other and I have been fooled often enough, but not this time.

I had hoped that the excitement at the north fence might mean that one or more of the first brood had returned, especially as one of my visitors thought he saw four thrashers, but nothing has developed to show that they have ever come back.

August 7th. About 8 o'clock two thrashers were "scripping" near the S.W. corner where I had never seen them. I went there with a gun . As they were up in a tree, it meant that if an enemy was present, it was one of which they were afraid and not a snake. There were also other kinds of birds there also, but I could see nothing but two dogs chasing each other in the street and it may have been that they were responsible. Everything quieted down almost as soon as I arrived on the spot and the birds dispersed. I went to see if anything might have happened to Snooty, but as I approached the glade, he came running out to me, so all three thrashers were accounted for.

About 10 o'clock a Cooper Hawk was seen sitting in an oak within a few feet of the scene of this morning's disturbance, but was gone when I returned with a gun. This is the first one seen here for several weeks. Another enemy back again.

About 11 Brownie was "sub-singing" in the glade, Greenie doing the same just outside of it--he hasn't done it for weeks. No signs of Snooty. Both Brownie and Greenie came for worms and both ate them.

I gave Greenie a lot to see if he would not show where Snooty was, provided the hawk had not taken him, but he ate them all. Both adults accounted for, both eating themselves and nobody looking out for Snooty. I wondered if he had been chased away, and then out he came from the bushes where Brownie was again sub-singing. As he came toward me I tossed him a worm to see what Greenie would do about it. ^{Both} ~~Greenie~~ ran for it and stopped short of it, froze and stared at each other about three feet apart. They maintained this pose for perhaps a half minute, when Greenie suddenly ^{squawked and} jumped up straight into the air as if he had been stung and ran away ten feet as fast as he could, stopped, remained motionless and appeared to be frightened. the young bird was not even startled and ate the worm calmly. I could not tell whether this was make-believe or reality. Yesterday I had seen both Greenie and Snooty jump suddenly and run this way and attributed it to ants or something of the kind. Just before this present incident I has seen one of those flat flies crawl under Greenie's head feathers--the first I have seen on either adult -- possibly it bit him--if it is a biting kind. I then tossed a worm to Greenie to see if he would take it to Snooty. He picked it up and appeared to consider the matter a long, Snooty watching but not moving. Greenie's final decision was to eat it himself. I tossed one to Snooty which he ate without having to consider the matter at all. Greenie ran up to have a look, but did not interfere. I held a worm out to Greenie and he came and took it and ate it, retiring to within a couple of feet of Snooty. A worm was than tossed about midway between the two. Neither budged, but both were struggling severely with their brains, if there is anything in outward appearances, when some bird gave a call which did not sound like an alarm note to me, but both birds ran off immediately, side by side, into the bushes where Brownie was. When I left all three birds were together in the glade, nobody had been chased and nobody had

threatened to chase anybody in my presence up to 11:40 A.M. of this day; nevertheless a distinct readjustment of interavian relations is now in progress. The youngster still thinks that he can lick either of his parents, so it looks as if he had not really put the screws on him yet and he has still to learn what they can do to him when, if, and as they make up their minds to it.

At 1:35 as I approached the glade a thrasher sub-song could be heard coming from it. As I entered, all three birds were seen in the bushes, and all three came out at once into the open spot in the glade, Brownie to eat soft-food at my feet, Greenie to eat from the dish 8 feet in front of me and Snooty to wait for Greenie to move aside and then to eat from the same dish. This striking unanimity in the choice of food --which was there all the time--coincidentally with my arrival surprised me, particularly as none of them came to me for worms first. Brownie retired behind me to sing, Greenie back into the bushes also to sing and Snooty came to me for worms and one first-class sun-fit. Everything was harmonious during the hour I was there, though nobody fed Snooty besides myself, digging, sunning, singing, resting, preening and Brownie pulling out soft breast feathers which floated off slowly in the air.

At 3:20 Brownie and Snooty in the glade came from the bushes to eat heartily of a fresh supply of soft-food separately. After this Snooty saw Brownie having a wonderful time, throwing pine needles and oak leaves out of a small drift where they had accumulated and ran over to join in the fun; but she turned on him fiercely and, for a few seconds the air on all sides of him was a blur out of which projected beaks and claws at all angles. For the first time he backed away, plainly overawed by this astonishing exhibition of speed and agility not having been able to do anything himself but pose innocuously as the center of a whirlwind. Although she did not touch him it was a chastened Snooty that retired to sun himself, and Brownie, as if to

make amends, followed his example about 18 inches from him. A few minutes afterwards, Greenie entered and Snooty ran to him opening his bill for food, but Greenie made rapid passes at him with his bill, but did not strike him and would not feed him. Another chastening, nothing to do but think it over, much subdued. Greenie came to me for worms, eating them himself and, as a strange coincidence, when I said: "Give the poor little fellow one, Greenie", that is just what he did. However, a little later, when Snooty approached Greenie for more food, perhaps five minutes afterwards, he was repulsed and went off by himself in the bushes. Un"happy days are here again".

5:40. Snooty the only thrasher in the glade, but in and out one or more were wrens, song sparrows, Lawrence goldfinches, green backed goldfinches, black-headed grosbeaks, purple finches, quail during the 5 minutes I stayed there. I had thought the Lawrences gone, but one sat and ate baccharis seeds within six feet of me.

August 8th.

At 8:30 A.M. no thrashers in the glade. Snooty was found at the oval lawn all alone, very much the adult bird, except that his bill is not quite so long or so abruptly hooked at the end. The white streak on it still serves to identify him. He climbs around in the bushes and trees like a veteran, peering out at one between the leaves speculatively and locating the various feeding stations as if he always knew where they were.

12:32 P.M. Snooty has just been practising his sub-song diligently about 7 or 8 feet from me in the glade. Just before this he was digging up stones and rolling them down the bank watching them roll interestedly--a typical thrasher trait. Before this he was taking worms from my hand and it was noted how much sharper his bill is than those of his parents. It has not yet had time to have the tip worn down. If he knew the strategy of personal combat he could

doubtless do as much, if not more, damage than his parents. He is going about by himself now and does not seek his parents. This morning one of them was seen to run up to him and threaten him rather mildly, but he stood his ground and the older bird retired.

Greenie is singing his sub-song more frequently now. I can see no difference between his and Brownie's, except, perhaps that he uses the pit-yur'ki or pityur'kit phrase a little oftener. He seems tamer than he has been at any time preceding his taking over the sole task of feeding Snooty. That job made him come to me oftener for food and in that way he became more used to me.

About 1:30 I went to the glade. In a short time all three birds were there, coming out one at a time, each getting worms from me in turn and there were no evidences of pressure being brought to bear on Snooty, although he stayed somewhat apart from the others. Greenie and Brownie were taking it very easy, loafing most of the time. Greenie spent a full half hour lying in a shallow hole he scooped in the ground in the shade. Once Brownie took a meal worm and held it out for him to take from her. He then held it in his beak in the same way, but she did not take it back again. They also played hide-and-seek with each other, but paid no attention to Snooty. †

About 4:50 when I was watering the garden I heard loud scripping near the glade as if something were afoot. Before I got there, Snooty came running out of the shrubbery by the side of the road, evidently in fear, and then Greenie. They both ran in again, so I went around to the other side and below the point where they disappeared and found both adults chasing Snooty. He came toward me and flew up into a bush overhanging the path near me and the two older birds stopped. He watched them narrowly and was hopping from limb to limb toward me, and I am sure, considered flying down to light on my hands held out to him, as he kept working toward them, when he suddenly stopped and look-

ed over my shoulder. I turned my head and there was Brownie on a limb just behind me watching him. He dove down under her and into the glade, Brownie following. I had to go by a circuitous route to reach the same spot and when I got there neither bird was in sight; but Snooty came out of the bushes almost immediately and ran to me with backward glances, but showing no fear of me, taking worms freely from my hand. He then cautiously approached the dish of soft food near the bushes from which he had just come. As he was eating, Greenie came out quietly and stood beside him. Snooty opened his bill, but not belligerently and Greenie struck him several times in rapid succession in the open mouth. I could hear the impacts. I felt like killing Greenie on the spot, but I suppose it is Bird Law. Snooty did not retreat or strike back and Greenie edged around to his side and partly behind him in hte manner sometimes used by thrashers^{when feeding the young}--as these notes record--and when Snooty opened his bill, Greenie leaned forward as if to feed him and struck him inside of his throat and backed off quickly when Snooty advanced courageously and followed him with a succession of quick stabbing pecks. I hope they landed! (This was all about six feet from me). Greenie defended himself by jumping into the air like a fighting cock, using his wings and feet on Snooty. I do not think he pecked him, but he certainly gave ground^{hastily} and retired leaving the field to Snooty. I was burning with indignation at Greenie, yet the scamp had the cheek to come over to me for a worm, as mild as a sucking dove. I gave it to him, notwithstanding his unfeeling treatment of a young bird already tired and frightened as a result of the chase just ended. Greenie went away and I coaxed Snooty to me for more worms. He then went to the drinking dish by the food dish and drank, then jumped into it to bathe---a bad move strategically. When wet he would be badly handicapped. As he was bathing, up came Greenie and calmly took a drink out of the same dish. Snooty crouched down in the water and opened his bill, again not belligerently, and

Greenie, choosing his stance deliberately, again struck him inside the mouth. I cannot tell, of course, how hard the blows were, but they were swift. It may be, in the language of the prize ring, that they were "pulled", for Snooty did not retreat or cry out, though, as Greenie went off again, he got out of the dish and once more came to me for food. I could see no signs of injury. He then went off about 7 feet to dry himself--he had not had time to get very wet--and then Brownie came from another direction. When he saw her approaching he lay down and put the tip of his bill on the ground--a pathetic figure. Brownie circled about him quietly at a distance from him of only a foot. He tried to face her without rising from the ground, but she kept pretty well behind him and suddenly jumped upon him and knocked him over on his back and seemed to peck him, but there was no outcry. It was hard for me to remember that Brownie is my oldest friend amongst the thrashers and that the adults are merely carrying out the Law in the manner presumably prescribed and that it would be useless to interfere, yet when she then came to me plainly expecting a worm, I gave it to her, but not as a reward for courageous, sportsmanlike conduct. Snooty had not run away in the meantime, so Brownie approached him again and he retreated slowly toward a little cave at the base of an Old Man sage and crawled into it as far as he could. It was not big enough to hold him. Brownie walked all about him looking at him, but he kept his head concealed and she walked off. He then went into the bushes. I went out of the glade and on my way back, in about three minutes, I saw both adults after him again, following him on the path through the orchard. They pursued him for 75 yards from the glade. I followed and they quit, scripping loudly. When I overtook Snooty, going by a roundabout route so as not to appear in league with his pursuers, he was taking refuge in the thick brush. So I went back to the glade slowly and when I got there, there he was! As he was still

somewhat wet, there was no difficulty in identifying him throughout the episode. By this time it was 6:15, one hour and twenty five minutes of practically continuous persecution. Two adult birds against one young one, and part of the time the old birds worked on him in relays, thus getting time in which to rest themselves if they needed it. When they lost track of him they deliberately hunted him, even more persistently than if he were a snake. Even birds of other species took note of the proceedings and gathered to look on. I suppose that this was not a final attempt to drive Snooty away, as from observations in connection with the first brood a preliminary period, possibly of training in self defense and teaching some of the obstacles to be encountered in later life, precedes the period of relentless striking of hard blows and actual pursuit outside the property lines.

While all of this looked cold-blooded and brutal and aroused my indignation, there was no outcry from Snooty at any time and he may not have been actually hurt.

August 9th.

At 8:30 A.M. Snooty came running out of the bushes in the glade to take worms from me, keeping a sharp lookout, however on the surroundings. They haven't got him yet.

11:55 Snooty has not been attacked this morning in my presence, and I doubt if during my absence. At 9:40 he sat in a bush in the glade preening. Greenie started scripping about 15 or 20 feet behind him in a tree, Brownie nowhere in sight. Snooty came out into the opening as Greenie flew across to watch affairs from a branch of the old oak above. As Snooty approached for a worm, Brownie, who had been heard coming from behind me, came out from under my chair, looked up at me as if asking whether she could have the worm, so I gave it to her. She then walked to a point about 4 feet to the left of Snooty and

stood there idly. Greenie dropped down from the tree and stood about 6 feet from Snooty on the other side of him. Snooty ran back toward the bushes in front of me and stopped before entering them. Greenie ran up to him and he crouched down on the ground and opened his beak as if for food, although it looked like a plea for mercy, and perhaps it was. Greenie after contemplating him for some time, reached over and tapped him lightly on the bill. As a reward for his forbearance I called Greenie over and gave him a worm. Up to the time I left at 10 o'clock there were no attacks, although the three birds were in the glade, the two adults busy about their own affairs and Snooty rushing in and out of the bushes and through them as if looking for a playmate, but avoiding his parents. I returned in about an hour to find all three still there, each attending to his own affairs and each interested at different times in the worms offered. Brownie repeated Greenie's inspection of ^{Snooty of} an earlier hour, but it was of longer duration and she did not touch him. All was peaceful when I left; but, from past experience, the campaign of persecution may be resumed at any moment.

From 1:45 until about 2:30, and how much longer I do not know, all thrashers were in the glade. During this time the only hostile demonstration was a mild sort of threat made by Brownie when Snooty approached her a little too closely, but it was not followed up. Snooty's eyes are still identical in color with Greenie's.

August 10th.

At 8:30 Brownie and Snooty were in the glade, both very hungry. For a considerable period it was not possible to give worms to Snooty because, although he would come for them readily enough, Brownie would manage to interpose herself between us and get it, whether I tossed it or held it in my hand. Holding it behind me where ^{could see it} only Snooty did no good as Brownie could not be fooled in this way and would threaten him when he advanced to get it. Brownie finally tired of the game or

got enough to eat and stoped interfering with Snooty, who then got all he wanted for the time being. There was no chasing, but some beak-snapping.

12:30. No persecution of Snooty was seen during the morning, although all three birds were frequently in the glade at the same time and there was plenty of opportunity. It is interesting to note that Greenie and Brownie show no signs of separating and still greet each other on meeting, when one of them has been away for a half hour or so, with small talk and opening of beaks. It looks as if they might remain permanently mated. I know that they have been together since Sept. 22nd. of last year at which time I first definitely saw them at the feeding table at the same time. I believe, however, that their companionship goes further back, though have no positive evidence.

At about 2:20 Brownie and Snooty were in the glade with no evidences of friction. I repeated the 8:30 experiment and was able to feed Snooty without interference from Brownie, handing worms to each in turn. I have thought that maintaining an abundant supply of food might tend to counteract the enforcement of territoriality laws by removing one reason for their existence and at least delay the final driving out of Snooty. As there is no new brood impending, it would also seem that this should be a favorable circumstance.

6:15. I spent most of the last hour in the glade. On arrival there all three thrashers were present, Brownie preening and napping in an Old Man (where she remained for half an hour), Greenie practising his undersong and Snooty out in the open. I gave worms to Snooty and neither adult interfered or even came out of the bushes for a long time. The nearest approach to it was when Greenie ran up to Snooty, stood facing him with his bill about four inches from Snooty's and looked exactly (from the movements of his bill) as if he were giving

him a severe lecture. To heighten this illusion, Snooty then bowed his head with bill almost touching the ground and opened and closed his bill as if he were replying with due humility. About quarter to six Brownie and Greenie, who had gone out of the glade a few minutes before, suddenly returned rather excited and ran in the direction of Snooty, all three birds disappearing in the direction of the orchard whence loud scripping could be heard by two birds. Thinking that they might be after Snooky, I hastened there and the scripping of one bird was located as coming from the fig tree. I called to this bird, and somewhat to my surprise, it came over and down to me still calling loudly, stopping only when it reached for a worm and resuming it immediately afterward. I administered the same treatment and it gradually forgot all about whatever it was excited about. This bird was ~~Greenie~~ Brownie. Going back to the glade. I found no trace of Greenie, but the youngster was there making the most persistent effort to catch a flying moth which I have seen on the part of any thrasher. If he had been the object of the adult birds' recent attention, he certainly had forgotten all about it. He even climbed a tree to get at the moth, but without success. However, when the moth made the tactical error of coming down to the ground where the thrashers are at home, Snooty got him. The chase lasted perhaps as long as a minute-which is a long time for an affair of this sort. Shortly afterwards Brownie reappeared, seeming to have no designs on her offspring.

Some time before this a young black-headed grosbeak was "recording" about 20 feet from me and about 10 feet from Brownie. It was clearly recognizable as a grosbeak song, even if I had not seen him. He was up about five feet from the ground in a ~~small~~ dwarf crab-apple. Brownie's attention was at once attracted by the song and her curiosity aroused. She walked over to the tree which is very small and open in growth and started to climb up to the grosbeak. Before she reached him he flew. Her motive seemed to be entirely one of curiosity.

August 11th.

At 7:15 A.M. Snooty was in the glade all by himself, happy and contented. The adults were not visible.

At 8:40 the situation was just the same, there being no signs of the parents.

At 12:00 , having been absent since the last observation, I went to the glade. Snooty was there and before long his parents came one at a time, neither offering violence during my stay of 20 minutes. If I were a thrasher, but with human faculties and frailties, I would not come out in the open when moulting at all, except under compulsion. Both adults are very shabby, but Brownie reminds me very forcibly of some of my juvenile efforts at making birds by sticking chicken feathers into raw potatoes. She has about 3, certainly not more than four, of her original tail-feathers left . The new ones are about 3 inches long, half of this being vane and the rest blue-gray stem projecting out of raw "meat". The tail coverts are sprouting in a neat symmetrical row, but are mere pin-feathers. The feathers on her sides are hanging in masses loosely, looking as if they would drop off in slabs as the hair does on camels. Her new wing-coverts are neat, but, when she fluffs, a bald spot shows on the top of her head and there are raw spots on her neck. At various other points there are deep depressions in her covering showing where feathers have been lost, giving her a spotty appearance and showing the bluish under-down. Practically every time she comes out into the bright sun, she insists upon "sun-fitting"; her appearance, bad enough before, is then about what I imagine it would be if she had just been shot at close range, using a good load of buck-shot. With all these superficial blemishes she is as sprightly as ever, demanding--and receiving--the usual tribute of worms, without apparent thought of repulse on account of temporary unhandsomeness. Greenie is not quite so ugly, but seems to be

a little shy today.

2:40. Brownie and Snooty in the glade and, while not exactly chummy, do not show any antagonism. Brownie, after a good meal, retired to a branch about 6 feet away on a level with my head and sang her sub-song for several minutes. She introduced the young grosbeak call several times. I think she has learned this only since these birds have been about the glade so much during the past few days. Perhaps a desire for information inspired her yesterday's attempt to get close to one of them!

August 12th.

About 7 A.M. one of the thrashers was heard singing loudly near the oval lawn.

At 8 o'clock Snooty was on the edge of the glade and his two parents were at the oval lawn.

About 11:30 I entered the glade and sat down, having just finished a general clean up, loosening up of soil and a thorough soaking of everything, including the ground and bushes where the thrashers spend so much time loafing. The birds were in the glade when I began operations and I wanted to see if they had been driven out by the sprinkling especially. However I had no sooner sat down than Brownie came directly to me with a large lump of mud on her bill which she did not try to dislodge and jumped up on me with her muddy feet, so she had evidently taken advantage of the watering to dig in the loosened earth. In a few minutes Snooty also came out, much interested in the drops of water hanging on the leaves and twigs, digging and turning over stones, practicing the full-grown thrasher "Scrip" together with his undersong and an occasional attempt at a full-voiced call. Both he and Brownie were delighted with the wetness of things. Brownie sang her undersong continuously for the next 45 minutes without interruption except when taking worms from me or eating soft food. During this time she was never more than 20 feet away

from me, most of the time within 10 feet, fully half the time within six and a large part of it at my feet and under my chair, singing all the time. While the song had its deficiencies in quality of tone, for variety and ingenuity of phrasing and unexpectedly sudden changes in character I have not heard it surpassed by any other bird. At times she would come to my side and concentrate all of her attention on the song.

5:15 All three thrashers have spent a good part of the day in and around the glade. No concerted attack has been made on Snooty. For the most part he has been ignored. Once Greenie ran at him and knocked him over, but not violently, and threatened to peck him while he was down, but did not. Snooty stood his ground and did not seem frightened. He has been out of the nest now about 26 days and while there has been no persistent chase of him for some time, reference to notes on the first brood shows that he has still much to endure if precedent is followed exactly, since the most persistent hunt and chase of brood No.1 occurred on the 27th. day after they left the nest. That time feathers were "spilled" and by the 30th. day the young birds were beginning to appear in the glade less frequently, due to the constant pressure of the parents, although the parents were by this time handicapped by having a second brood to look out for.

August 13th.

At 7:45 A.M. Snooty was up in the large horizontal branch of the old oak which overhangs the glade; the parents were not far away, as they could be heard. Snooty was finishing the drying process after a bath and as there was still food left in the dish on the ground, he evidently was not suffering from hunger, so did not care to come down at first. However, with a little coaxing, he changed his mind and came to me for worms. The last one he carried about for a long time looking for another bird and uttering the

parental clucking feeding call, but could find no takers, so had to swallow it himself.

At 9:30 he was at the oval lawn. I went to the glade and the two adults who had been scripping some distance away and in opposite directions from the glade approached, one at a time. Greenie appeared ^{near} first in the top of the old oak. Brownie climbed up to him all the way from the ground and the "conversed" in pantomime. Brownie came down and cleaned out the box of worms on my knee and then collected a sheaf of soap-root fiber only to drop it and collect another and so on, all the time making little inarticulate sounds. It is strange how the nest-building instinct seems to insist upon coming to the surface at unexpected times--or what looks like it. Even Snooty will pick up and carry twigs and similar material occasionally and the adults have been seen to do this irrespective of season.

At about 10:30 one of the thrashers was singing in full voice. When I attempted to locate the singer the song gradually died out and the two adults came out of the chaparral whence the sound came, went to the glade side by side and proceeded to eat out of the soft-food dish, so I was unable to identify the singer.

At 11:30 I was giving worms to Snooty in the glade when Brownie suddenly appeared out from under my chair and insisted upon taking the worms herself. Snooty moved away a few feet and when I tossed worms to him, Brownie snatched them out from under his nose, but made no effort to drive him away even though Snooty crouched and glared at her with open bill. They both remained in the glade. If Snooty knew anything about the history of his brothers and sisters of the first brood he would be justified in regarding his plans for the future as subject to complete revision at a moment's notice.

At 2:30 both Brownie and Snooty were in the shrubbery at the oval lawn where they could catch the sea-breeze. It was very hot in the glade. There were no signs of hostilities.

About 5:30 all three were in and about the glade and the berry-patch. A little later they were all running about near the north boundary and there was some "scripping". It looked as if there was some slow stalking of Snooty going on, but of this I could not be certain. I think also that there was a fourth thrasher--a young one--also present part of the time, because Greenie was more than casually interested at a place in the fence where I had just seen a thrasher trying to get in from the outside when Brownie and Snooty were with me and Greenie was almost certainly not at that place near the fence when the suspect was seen. He, however, flew over there immediately afterwards and Brownie left me to join him. Snooty, who would not come to hand with Brownie present but stood off 3 or 4 feet and glared at her, came to me as Brownie left. When both adults started scripping loudly over near the fence where I thought I had seen the fourth bird, Snooty at once cocked his tail up in the air and went off in that direction to investigate. All three birds went up into a pine tree, the adults continued their excited calling, but when I went over to investigate, stopped, and although the tree was in an isolated situation so that arrivals and departures from it could be easily detected, nothing could be seen of any of them, although I hunted for several minutes and everything was quiet.

August 14 th.

At 8 A.M. there were no thrashers in the glade. After some calling and whistling, scripping was heard off to the S.E. and Greenie was seen in a cypress about 100 yards away, though the identification could not be made until later. He dropped down to the street and came running toward me with great speed, following the center line of the ^{street,} which has a curve at this place, as if he were on rails, and instead of cutting across the curve to come to me, he held to the curve and swept grandly by, his legs a blur, until he ar-

rived opposite the glade, where he entered the chaparral, still scripping. I went into the glade and he soon entered, friendly and hungry. It was not until I could get the direct sun on his eyes that I could identify him positively, as he is now just about as shabby as his mate. I wondered if he and Brownie, who was not in evidence, had been out of bounds assisting Snooty in an involuntary [†]deparure to more remote regions, because Snooty could not be seen either. When I went back by the oval lawn, however, Snooty came out from the bushes there, taking worms from my hand. He is now a pretty sophisticated bird and keeps a wary eye on his surroundings. His head looks flatter than either of his parents'. His eyes are still the same as Greenie's in color, but he keeps them open wider most of the time. A good plan just now.

10:50 A.M. At 10:20 I entered the glade and sat down. In about a minute the missing Brownie was out of the bushes and sitting on my left ankle where it rested on my right knee. She sat there while I handed her one worm at a time, gradually edging up toward my left knee, patiently waiting for me to dig each worm out of the bran instead of scraping them out herself as she likes to do. She dropped to the ground beneath, where I could see her only by leaning over and looking directly down on her back. She stood there seeming to be listening to the "kut-kut-ka-dah-kut" of a distant hen, when it suddenly dawned upon me that she was the singer, and so she was.

In the half hour or so that she hung around me she used this phrase, usually only the "ka-dah" part, frequently, evidently being much taken with this new accomplishment for the time being. She also introduced an almost exact imitation of Mrs. Edwards' whistle to the dog that accompanies her in her walks about ^{the} vicinity.

There are no chickens in this ^{neighborhood} vicinity as far as I know, though I have sometimes heard a cock crow in the distance. Perhaps Brownie

on some of her expeditions has heard them, or it may be that her hearing is more acute than I have thought.

I lived for about ten years where mocking-birds were about the grounds constantly, but never observed in them the imitative faculty that this bird possesses, or the striking contrasts between adjoining phrases.

7:15 P.M. The three thrashers were seen at various times during the afternoon. Snooty was keeping himself apart from the others. Between 5 and 6:15 he could not be found. The others were in and about the glade, one or the other at times breaking out into full song for a bar or so.

August 15th. At 8:30 both Brownie and Greenie came into the glade to take worms from me. No signs of Snooty any place. Brownie had just had a soaking bath and in her sparsely feathered condition presented a sad spectacle. The pin feathers on her bald spot begin to show conspicuously. The two adults spent most of the time in the glade during the forenoon. Snooty could not be found until after 12 M., when I was about to note that he had probably been driven out at last; but a last look at the oval lawn disclosed him there very shy and alert, but willing to take worms.

6:30 P.M. Snooty was not seen again during the day, but his parents were much in evidence.

August 16th.

Looking out the window at 6:20 A.M. I saw Snooty at the oval lawn. I went down there in my pajamas, but this unaccustomed spectacle did not daunt him and he came for a worm or two. In a few minutes Greenie also came. When I got back to my room a thrasher was singing an unusually high-pitched song from the trees below. I had not heard this type of song before. Calling from the window (on the west side of the house away from the oval lawn) did not cause the bird to appear. In a few minutes Greenie (I think it was) came walking around the corner,

headed into the thicket and the song was replaced by a "conversation" which lasted indefinitely. About a half hour later both adults were in the glade. I have seen no active pursuit of Snooty now for some time, but he seems to avoid his parents. Even if they should actually stop chasing him for good, I am inclined to think that he might ultimately drift away of his own volition. The last two or three times I have seen him attacked he was to a certain extent responsible himself, since, as his parents had not been seeking him, he probably would have been safe from them if he had kept away. He made the mistake of attempting to join them in their miscellaneous activities and was driven off.

10:00A.M. I have just returned from the glade and, in passing the oval lawn, saw Snooty chasing various insects over its surface. When I exhibited worms he ran to me from about 20 feet away without hesitation, taking a number from my hand, only to retire to the bushes in a panic because a ground squirrel uttered its sharp call a short way off. (At least that is all I heard)* In the glade at 9:30 Brownie came out of the bushes as soon as I sat down, ran up to me singing happily, jumped to my knee, waited there patiently for each worm I handed her, talking a little between worms, then dropped to the ground and wandered under my chair, over my feet and all about me singing her undersong and thumping hard places on the ground with no interruption of the song whatsoever. While some visitors have heard fragments of this song, unfortunately, so far it has been at its best when there was nobody else about and the bird has, in consequence, been perfectly at ease. At the present time it is filled with mimicry and changes from day to day. At the moment I do not recall ever having heard imitations of other birds except in this undersong, having no recollection of hearing it in the full song, though these notes may show otherwise. In quail imitations the familiar quail call is not the one most frequently heard. At present it is a conversational phrase

used by the quail when feeding in a flock and also two others. One of these is the "Chulk----chulk" made by a cock quail when threatening another one and the other is the peculiar confused medley of sounds made by quail only when actually being attacked--at this place it is usually a hawk or a cat. It is none of the sounds in Hoffman, page 87. Another peculiarity of this thrasher undersong is that it seldom mimics all of the song of any other bird--only fragments--and frequently imitates the sounds made by other birds in a flock. As an example of the former there is the meadowlark fragment and of the latter, a tree full of English sparrows. Fortunately this one is not loud. Another fortunate circumstance is that the imitations of the harsher bird calls and "songs", such as ^{those} ~~that~~ of the California Jay, Red-shafted Flicker, Western Kingbird and others are very much softened and sound as if coming from a distance even when the thrasher is so close that I can reach it with my hand. As to the thrasher's own contribution to the medley which makes up the undersong, it must be admitted that some of them, considered apart from the whole, can not be ranked with the highest in bird music. Brownie at present is singing a large part of the time, when near me at least, and the frequency and ^{the} length of her performances ^{are two} ~~is~~ one of the reasons why I am not so sure that "she" is not the male, Greenie being relatively silent. Greenie, however, on the present occasion when Brownie retired into the bushes to continue her practice, jumped up to a limb about ten feet away and sang loudly for a few seconds.

About 11 o'clock when I was in the glade with visitors and the old birds had just gone into the bushes again, Snooty joined us for a snack. They haven't got him yet.

About 3:30 the parents were in the glade and Snooty was at the oval lawn. This is his 30th. day from the nest and reference to notes on the first brood shows that the parents knocked feathers out of some of them on their 32nd. day (approx.) out of the nest and that

the 33rd. day(approx.) was the first one on which none of the youngsters was seen. Consequently, by precedent, Snooty is not out of the woods yet.

Brownie's ^{new} upper tail coverts are showing the vanes expanding now.

At 5:35 Snooty came blithely into the glade, took a bath, ate some soft-food and worms. He heard Brownie singing 30 feet to the east and called, using his baby call. Brownie ran up to him and they sparred a little, but were too far away in the bushes to see the details. It did not seem very serious and Brownie retreated more than Snooty. Snooty then went north across the road, voluntarily, and Brownie followed shortly and unhurriedly by a parallel route. It did not look like a chase, but I followed by an indirect route to see what might happen. Both birds, in the meantime, had disappeared into the low trees along the north line and as I could not find them, although I looked about the vicinity and waited until 6:15. Precisely at 6:15 a succession of very loud calls was heard from the old oak. I went there and stood under it. Greenie was perched on a stub calling and looking in all directions, evidently also at a loss as to the whereabouts of his family. After calling repeatedly for about five minutes he dropped to the ground and I saw that Brownie had arrived. To make certain of the identities I induced both to come to me for worms. Also I wanted to hold them for a time to see if Snooty would come; but he did not. Both birds then went north across the road together, I followed as before, only to find nothing but towhees, etc. I had tentatively decided that they might be going to join Snooty off to the north outside the property and that Brownie might really been guiding him to a roosting place outside as a peaceful means of getting him accustomed to go elsewhere, thus solving the territorial problem without engendering hard feelings. Going back to the house I was considering the prospects of Snooty's being back again in the morning.

This seemed to depend upon whether his recent disappearance had wound up agreeably or otherwise--at least in part. I decided to enter in the notes the guess that he would be back as, after considering all phases of his recent exodus, the conclusion was that it was peaceable. At 6:35 I looked out of the window and saw a thrasher on the oval lawn, so I had to get the worms and see who it was. Snooty, of course!

August 17th. At 6:25 A.M. two loud calls sounded from the tree south of my bedroom window. This was followed by full-voiced song in which there were occasional introductions of the flicker's "Yay-cup, yay-cup...." (See yesterday's notes re imitations not being used in full song!) The song was entirely different from that of yesterday morning, deeper and richer and of fuller volume, but still a thrasher song. It shifted about from place to place and I followed the singer to the old oak, enticed it down with a worm and it was Brownie. I was hoping that it might be Greenie. (These worms are better than field-glasse s with these particular birds.) No other thrashers in sight or sound. I get the impression that these early morning songs are in the nature of assembly calls.

At 7:30 both adults were digging in the oval lawn. For several days they have been showing a marked tendency to violate the gentlemen's agreement with respect to this particular grass plot. When I sat down to watch them they had the cheek to move ^{their operations} nearer to me on the unviolated section so as not to miss any worms in the event I might be inclined to yield to their blackmailing activities. They got angleworms and missed a yellowjacket or two. Why they sometimes eat the former and at other times reject them I do not know.

I left them at the lawn and went to the glade--no Snooty-- but both Brownie and Greenie found me there almost as soon as I got there. Both wanted worms, Brownie especially, coming with little whines and gurgles to jump up for them. One they divided between them. This

although clearly unintentional, was, nevertheless, amicably done. Brownie is losing those very small feathers at the base of the upper mandible. Both birds have had baths and look like scalded chickens just before being plucked. To look at them one would say that neither could ~~be~~ reasonably expected to utter any sound more pleasing than a squawk.

9:25. Snooty at this moment is inspecting the the feeding station for the finch tribe at the oval lawn. I do not know how long he has been "back". (The "he" is purely rhetorical. I have to use some pronoun. I have no evidence of Snooty's sex which I can interpret.)

He has lost the white mark on his bill, but his plumage is perfect as compared with that of his parents. Also his bill is still not quite so heavy and not so abruptly curved. While all of these thrashers have prominent ear-coverts, Snooty's are different from those of the other seven thrashers which I have repeatedly seen here at arm's length --or less--in two respects. First, the lower and the posterior edges are raised more above the surrounding feathers; second, they are assymmetrical, in that the one on the right hand side has, ever since he left the nest at least, projected above the surrounding feathers of the neck higher, giving the effect of a ruff. For the present, at least, this serves infallibly as a means of distinguish~~ing~~ him from any of his nestmates in case they should appear at any time. In eye color and in grace of form he is a miniature of Greenie at his best, with the exceptions noted and, possibly also some difference in roundness of eye flatness of the crown of the head. He has just been taking worms from me, so I have had a good opportunity to look him over well. Before coming he deserted the food dish because there were too many yellow-jackets there, as his actions plainly showed. If their effect on thrashers were comparable to their effect on me, the thrashers would undoubtedly be killed if stung--and I think they are stung. I was stung on the forearm about a week ago. The swelling, which reached

from hand to elbow, the stiffness and the itching have about gone, also the discoloration; but there is still a purplish red patch about 3 inches long by $1\frac{1}{2}$ wide surrounded by a border of yellow.

Yesterday Brownie came rushing out of the bushes, jumping and dodging with ruffled feathers and alert glances in all directions, accompanied by some flying insect which I could not identify. She preened thoroughly but was a little jumpy for a time.

10:35. Snooty at the oval lawn and not afraid of the sprinkler. On going to the glade Brownie and Greenie both came for worms. The only way I could insure Greeny's getting approximately his share was by holding worms in each hand, the worm intended for Greenie being kept out of sight of Brownie, if possible. This did not always work, for Brownie frequently got off-side. Brownie then treated me to about three quarters of an hour of almost uninterrupted under-song. I do not think that the term "whisper-song" applies to these birds at all. There is too much volume in their undersong. At times it is as loud, I think, as it can be without opening the beak. This time Brownie, on the ground close by, produced imitations in rapid succession and got so far ahead of me that I was completely bewildered. The more familiar ones penetrate the consciousness instantly and one "knows" instinctively that it is so and so singing or calling; but if there are less familiar imitations and others of birds whose notes are not known to the listener, he gets lost in trying to identify them. In my case there are many calls and songs of native birds that I do not know--even common birds--and it is my belief that these thrashers--Brownie especially at present, include in their repertoires the notes of birds of many kinds in addition to those recognised. I am constantly hearing from her sounds perfectly familiar which I am unable to place, others that are vaguely reminiscent and still others that I am reasonably certain that I have not heard before.

In these notes there will be found no claims of mimicry of sounds ~~with~~ which I am not able to identify positively. In this last performance I was surprised to hear the "Pitch-it" of the ground-squirrel. I thought nothing of it at first as it is a very common sound in this vicinity. But when it was repeated practically at my feet and then it was shortly followed by the confused cries of a whole colony of ground-squirrels when they are disturbed and Brownie's throat was pulsating and there was no other sound to be heard, then I decided that these creatures must be added to Brownie's score. The "pee'-yulk" of the flicker was included this time. (Hoffmann hears it as "ti'-err"). When Brownie stopped to catch yellow-jackets and spread herself out on the ground, like a hawk nailed to a barn door, after that. Greenie close by, but out of sight in the bushes, continued the concert. As I passed by the oval lawn at 11:25 on returning to the house to enter this record, Snooty was at the finches' station eating seeds and swallowing them whole.

4:15 Snooty has not been seen often this afternoon. Greenie is also losing the small feathers at the base of the upper mandible. The wings of both adults are practically intact.

suddenly
Brownie has_^ assumed a domineering attitude towards birds in the glade for some unknown reason. She chased a wren and a brown towhee away from the food dish when she wanted no food herself and did the same to Greenie, but that time she ate. She chased a brown towhee out of the brush and hazed Greenie three times--enough to cause him to leave the glade. Another time she appropriated the hole he was digging. He became shy of her and would not come to me for worms when she was where she could get to me quicker. Whenever she went near him he went on guard, sometimes opening his bill "hahing" at her. I do not know whether this portends anything or not.

Greenie practised his undersong several times during the afternoon, but being more shy than his mate, stayed farther away, so

I was unable to compare the two songs under similar conditions.

August 18th.

6:07 P.M. I had little opportunity of observing the thrashers today; however all three were accounted for by 9 A.M., Snooty apart from his parents. Both Brownie and Greenie were heard singing their undersongs at various times and two or three times were seen together. At about 5:45 P.M. I looked them all up. The two parents came to me in the glade for worms and Snooty did likewise at the oval lawn.

August 19th.

About 6:25 A.M. a thrasher could be heard singing loudly off in the direction of the old oak.

About 7:30 the only thrasher to be seen was Snooty in the glade, very round-eyed and fearful of his surroundings, looking warily in all directions and darting back into the bushes at the slightest disturbance. As I left one of the older birds could be heard approaching.

There is a thick, roughly square, piece of glass near the food dish, about 2 by 2 inches. From the first this has interested Snooty. At the time he was learning about water he frequently tried to drink this glass by scooping his bill along the surface.

At 9:00 Snooty was at the oval lawn; both parents in the glade, coming out, on seeing me, side by side; but Greenie taking a back seat when it came to getting worms. For about a week the Spotted Towhees, who are still feeding young someplace, and who have been making regular visits at short intervals to the thrashers' soft food dish in the glade for weeks, have been much interested in my distribution of meal-worms. Without invitation they will hop about me expectantly and when I display a worm, will approach confidently to within about 2 feet of my hand and occasionally nearer. Yesterday one took a worm about 2 inches from my finger tips and they always, now, take worms tossed to them. These are not eaten by them but carried off always in the same direction and along the same route as far as I can

see from my seat. If I toss a worm near a thrasher and not too far from a towhee, the latter will frequently run for it, but is usually overawed by the thrasher. The female is much the tamer. They are sometimes driven away two or three feet by Brownie, but so far, not by Greenie.

11:55. On returning from town I saw Snooty at the oval lawn. I place a chair near the shrubbery, so that he would not have to cross the open to reach me, but he would not come out. I then went to the glade where Brownie (as it later proved) was singing her undersong in the bushes. To my surprise Snooty came to me almost at once half running, half flying, (I had just decided that he was getting wilder) As I was trying to get him to jump up into my hand instead of picking the worms out of it (by raising my hand so that he would have to stretch to the utmost to reach the worms, scraping his chin in the process) Brownie ran to me and Snooty clear-out--neither bird making an issue of the matter. Snooty stayed behind me about 10 feet away, not apparently frightened, and Brownie, when satisfied, went off a few feet in the opposite direction to lie on the ground and continue the undersong. By reaching back over my chair where Brownie could not see my hand, I managed to give Snooty a good feed. (These birds are not piggish in the matter of worms and eat only a few at a time). The worms were mixed with bran, so he had to dig for them, raking my palm with his very sharp bill and pecking me deliberately several times when there were no worms in plain sight. He seems to have some association or instinct in connection with this pecking which causes him to act as if he understood that it was not the thing to do, because when he delivered a good one he would step back quickly a few inches and pause before advancing again. In order to search between my fingers he showed a technique which I have not observed with thrashers before, but which a tame Bullock Oriole which we had years ago used constantly on hat-bands, button-holes and fingers.

This was to insert the closed beak --in this case--between the fingers then open the beak like a pair of compasses in an effort to pry the fingers apart. As I held my fingers pressed tightly together, Snooty could not get them apart, although the force used was considerable; enough, in fact, to distort the beak so that the two mandibles cross-each other sidewise. (Like an open pair of scissors lying on a table.) This may, of course, have been intentional; but it did not look or feel that way. (Incidentally I have noticed that thrashers when digging, either with vertical strokes or with side-sweeps, frequently open their bills at the beginning of a stroke even when nothing is taken into the bill).

Snooty still occasionally carries the "last" worm about and clucks. This is his 33rd. day out of the nest.. It was about the 33rd. day that for the first time none of the first brood was seen about the grounds.

During the afternoon all thrashers were seen frequently, the adults occasionally together, but Snooty usually apart. Brownie was not seen to do any hazing of Greenie or other birds. To test this as regards Greenie I tossed one or two worms between Brownie and Greenie and while Brownie usually got them, although Greenie ran for them too, drawing back when he saw Brownie and he were going to come to close quarters, on one occasion he reached forward and took the worm from Brownie's bill without protest from her.

August 20th.

About 8 A.M. Brownie was at the oval lawn and Snooty in the glade, Greenie not seen.

At 8:25 the same high-pitched thrasher full-song was heard from the same general location as noted the other morning. No investigation was made to determine its author.

All three of the birds were seen at various times during the

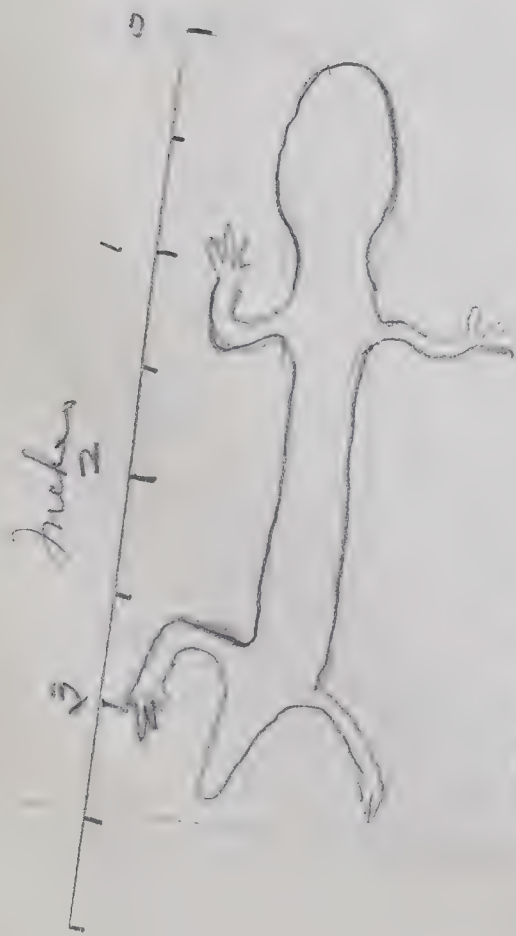
forenoon.

At 1:35 in the glade Greenie unearthed a salamander (newt, water-dog) which I supposed at the time was a lizard as Greenie was about 15 feet away in the shade. He pounded the creature for about 5 minutes, stretching to his full height to increase the force of his blow. He then abandoned it and Brownie took it into the bushes where I could barely see her and worked on it for about 10 minutes and then disappeared. As I left the glade I saw her still working on it. She then abandoned it in turn and Greenie took it; then Brownie, etc. Finally after 25 minutes had elapsed (actual timing) both left it, so I got it and made a rough tracing of it. (346A) Its tail had been broken off so that it was a stub $\frac{1}{2}$ inch long. The length overall was $3\frac{1}{2}$ inches (approx.) All blows seem to have been aimed at the head which was somewhat battered. I took it back to the glade and offered it to Brownie and she worked on it for several minutes more, then gave up. It was too big to swallow and too tough to break up. This adds another item to the diet, as clearly, if the newt had been smaller it would have been eaten. There was no disagreement between the birds over possession, each seeming satisfied to allow the other to do whatever it could to the animal. Immediately after this episode Snooty was given worms at the oval lawn. He is still very round-eyed, flat-headed and nervous about things in the surrounding shrubbery. He also still deliberately pecks my hand and the last worm, again, was carried around for more than a minute accompanied by cluckings.

About 5:00 Snooty was in the orchard and his parents were at the east side of the glade, outside, taking turns at hammering either a lizard or a newt. When I went to see which it was Greenie ran off with it into the bushes and when he returned he did not have it.

After this Brownie favored me with a long solo, sitting on the ground near my feet. The new tails of the pair are about three-quar-

346 A



Plant(?)
Caught by Greene Aug 30/1933 - 1.35 P.M.

See notes p 346. Skin is
full sized ~~same~~ roughly
head.

ters grown. Their wing coverts seem to be finished and their tail coverts are making a good showing, but their body feathers are rougher than ever. They seem to have lost few, if any, of the flight feathers in their wings due to the moult, although there has been a gap or two in them for some time, possibly due to accident.

August 21st.

9:00 A.M. At 6:25 A.M. thrasher full song was heard to the west from a clump of oak 40 or 50 feet from my bed-room window. A similar song was heard at the same on the side toward the oval lawn. They were similar in character, but differed in detail--no more, however, than the song of any one individual differs from time to time. For a time the songs seemed to answer each other. (Snooty is outside the window on the terrace picking up grains of corn--a new location and a new performance for him. He sees me through the window--9:05--drops it picks up a fuchsia fruit with a long stem and runs off.) (9:10--back again --off again). Then one of the birds which had just been seen on the lawn was seen to join the other--or go to where it was singing--then there was a duet which sometimes consisted of full song by both, undersong by both, by one, etc. in various combinations, also, at times, responsive. Throughout at intervals the singing was punctuated rhythmically by two bell-like notes, the first pitched at about the third C above middle C and the second at the G next lower. ~~xxxx~~ As near as I can write them, they were "Teen'-tawn". Rising inflection on the first, which carried the accent, falling on the last. It sounded as if one of the birds only was doing the "bell-ringing", though I doubt if such was the case. The quality of the notes was "glassy" in the first and ^{slightly} "husky" in the second. This is an entirely new phrase in thrasher song at this place. Also new was the introduction of intervals of the "dee" portion of the kildeer's call. This corresponded both in pitch and quality of tone with the kildeer's

own rendition of it. I do not know whether it was mimicry or not, but the birds have occasional opportunities of hearing this call here. At the same time as the singing was going on frequent scolding calls of the Vigors Bewick Wren came from the same place. This call was heard only when the thrashers were singing and, I think came from them. Although this wren is a resident at this place and seen "all the time" I do not think it probable that it would scold only when the thrashers sing. The thrasher concert lasted just 20 minutes and then ceased abruptly.

At 7:30 I found Snooty in the glade, shy but friendly. After giving him worms I went directly to the house and looked at the clump of trees where the adults had been singing, as there was some scripping going on there and a young, fully feathered (that is, not moulting) thrasher came out through the leaves of the upper branches followed by an adult, neither in a hurry, but both disappeared in different directions. I went down into the thicket quietly and heard an undersong coming from a clump of hazel. In this clump and about ten feet from me were three thrashers, Brownie, Greenie and the big youngster all fully at ease with no show of hostility or fear on the part of any of them, sitting ^{on branches} about 3 or 4 feet from each other. They did not retreat, but, on the contrary, worked into positions where they could see me better, and, in the case of Brownie, where she could take worms from my hand. I could not identify the youngster (who left shortly on his own initiative) but ^{did} not think it was Snooty at the time, ^{just left} whom I had, 100 yards away working his way toward the chaparral in the opposite direction, because the interval of time seemed too short; I could not see his "ruff" and this was a new location for him. However, on going back to the glade, I could not find him and his appearance at this window--just noted--shows that he is wandering all about the property. On my way back to the house there were two kingfishers in the trees at the tool house, a dead spotted towhee

nestling with pin-feathers just sprouting (so there is another S.T. nest- and in August) and either a vireo or a kinglet seen and heard singing in a ceanothus only a few feet away. This song is the one which Brownie has been heard to reproduce exactly. (See p.5.)

If Snooty was the young bird seen with his parents, it will be ^{may have} seen that he deliberately looked them up and that he was not chased away.

About 11:00 Greenie at the oval lawn singing undersong, Brownie in the glade doing ditto. Brownie used the "bell motive" for the first time in my presence in undersong. Other phrases were numerous, most of them impossible to approximate in writing. Some were variations of ones already recorded, such as those based on the pit-yoor'-ki motive. These were: Pee'-yoori; pee'-yori; Pit'-yoori ; pit'- yori. Then there was the Yay'-cup base with its Yacup-yacup-dee-dee. Also a long clear whistle that was trilled. Ca-dah'-cut was again included.

Nest NO.46 (At about 2:15 I decided to look for the Spotted Towhee nest beginning at the place where the parents make the most noise. After locating this I displayed one worm at a time. One of the parents soon came for the first one, disappeared into the lower branches of a small pine and reappeared without the worm. This was repeated several times, the bird (the female) coming to within a foot of my hand each time. In this way I got the location within about 2 feet, then pushing in among the branches, found the nest about four feet above the ground in the pine with two young in it just getting pin-feathers. This is nest No.46). *First one found in a tree.*

All thrashers were seen frequently during the rest of the day and there were no signs of Snooty's being driven away. Perhaps territoriality is not strictly enforced after the nesting season.

August 22nd.

About 8 A.M. Brownie was in the glade. The others were not seen and I did not look for them.

About 9 A.M. Snooty was taking a bath in the upper court as I stepped out of the dining room door, but he deserted it to run to me for worms, taking all I had and then going back to complete his bath.

About 10 he was down in the orchard and when I sat on a wall by the path, he came from about 40 feet away, jumped up on to the wall beside me and then on to my hand--his greatest show of confidence to date. After getting the worm there he pecked my hand and my coat sleeve and eyed me curiously. His ruff is quite distinctive and his eye color is unchanged.

about 20

I got cut-worms out of the small moss lawn (*Arenaria Caespitosa*) by inserting electrodes in it and connecting them with the house lighting circuit. This makes the worms crawl out. I gave them to Snooty and Brownie one at a time. The very small ones they swallow whole, but the larger ones they ^{shake} beat and throw about until they are limp and have lost a large part of their "innards". Some of these portions are thrown as far as 6 feet and, I think it very probable to twice this distance--a good thing to remember if one is feeding anything sloppy to a thrasher. If the bird is either facing one or standing with its back toward the observer, then one is safe, because the throwing is done by shaking the head from side to side with incredible speed through a very short arc. This shake has been recorded in these notes earlier and is rapid enough to cause a distinct buzzing sound if the object shaken is not too heavy.

During the rest of the day--as during the forenoon--the birds remained apart. Greenie was scarcely seen at all, but heard several times. Snooty is the first of all the thrashers to show much interest in the higher part of the garden, which forms a sort of patio enclosed on three sides by the house. I hope he is selecting this for his exclusive territory, though doubt it. He was there several times today, each time well pleased to come and see what I might have for him.

Brownie introduced the clucking call of the quail today and



The house is a two-story building with a tiled roof. It is located on a hillside and is surrounded by lush vegetation. The house is built in a style that is typical of the region.

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and the call note of the song sparrow. I am surprised that she has not used the "sa-pah'-toh" of the quail. (This is the Spanish zapato which, as children, we thought best represented this call). (Incidentally, it was not so long ago that I found out that the "zapato....chulk" call sometimes heard is made by two quail. One says "zapato" and the other nearby says "chulk", stretching out its neck and ruffling up the feathers on it).

Both Greenie and Brownie practiced their undersongs, Greenie hidden and Brownie in the open near me.

August 23rd.

Early in the morning a thrasher was in full song in what has now become the usual place to the west of my window. This was kept up with little interruption for about 20 minutes.

While I was at breakfast Snooty appeared first at one window and then at the other. When I went out to see if he wanted worms, he was hammering the suet mixture at the feeding station in the upper court.

About 8:30 Greenie and Brownie were on the oval lawn and had made decided records of their presence there. Brownie came up to me in the upper court as did also one of the spotted towhees, both on the same errand. Greenie would not leave the lawn, so I went down to him to give him his share of worms--a rather difficult feat when Brownie is around. After this I went to the glade. Snooty came out of the bushes at once, looking anxiously in all directions. As he was about to take worms from my hand, Brownie came out of the bushes like a streak and the chase was on. In and around the bushes, I being in the approximate center of the whirlwind, Snooty dodging and doubling unwilling to leave the glade. At a favorable opportunity I managed to land a soft clod of earth between pursuer and pursued and Brownie fled in panic as it exploded like a miniature shell and Snooty halted

at once. With all of his other troubles, this added disturbance seemed to ^{cause} ~~cuse~~ him no concern. He stayed where he was and watched developments. Brownie forgot about Snooty, as I ~~had~~ hoped she would, and did not connect me with the bombardment, as I also anticipated, so came out of the bushes when I called and showed her a worm. After taking a couple she went about her own affairs in the bushes where I could not see her. This appeared to be a good time to see that Snooty got his rations, so I tossed a worm about half way to him (he was about 20 feet away). As he ran for it the all-seeing Brownie rushed out and grabbed it and Snooty darted through the fence into the chaparral without being chased at all. Brownie retired to a distance of 75 or 100 feet and tuned up. I went to the walk that parallels the fence where I could see Snooty. In a few minutes he climbed up over the fence and came to me, keeping a sharp lookout in all directions. He was very nervous and between worms would walk up and down the path each side of me and peer into the bushes and look up and down the path. He was especially watchful in the direction from which Brownie's song could be heard and as this began to approach, he stole off into the bushes. Manifestly he is not to be allowed to remain here in peace.

As he has begun to show more interest in the immediate neighborhood of the quail's feeding station just outside this window (The quail are there now about 10 feet away. The slate color is showing through the plumage of the youngsters in patches) I shall see if it is possible to establish for him a preserve of his own in the upper court. I do not think it can be done; but one encouraging factor is that the adults do not appear to consider this good feeding territory.

Snooty now shows some broken feathers and it may be that the older birds are responsible.

At 3:30 Brownie and Greenie were both at the oval lawn. There was little rivalry between them when worms were tossed to them; while each ran for them, the one that got there first was allowed to have

it in peace. Once Brownie reached for a worm in Greenie's bill without objection from him. She took hold of it but let go immediately. I then went to the glade to look for Snooty, but he was not there; however, the ubiquitous Brownie got there nearly as soon as I did.

I found him digging peacably in the upper garden near the dining room window

Snooty's new territory. ~~dear~~, which is where I want him. At present he likes this vicinity and it is, as yet, the one where he is least liable to interference.

I have placed a special soft-food dish outside the window for him and I think he will find it. He is not so fond of this food as the other young thrashers were. They would climb all over me for it and not

Illusive size. show disappointment when they found no worms. He looks as big as a magpie when in the bushes several yards away, but when close by he looks slender and frail. This is the same effect noted with his parents

Appearance during moult. some time ago. They are all puffed up and ragged now, looking about the same size at all distances. From time to time feathers actually fall off of them without assistance from their bills and in their

Present coloring. usual haunts feathers are scattered about on the ground. Their color scheme now is brown mixed with patches of blue-gray where the new pin-feathers are showing. I had thought that birds did not sing while moulting, but these birds sing more now than at any time during the past several months.

August 24th.

Early morning singing in antiphony. I was awakened at 5:25 A.M. from a dream in which I was making a losing effort at packing my belongings preparatory to catching a steamer that was about to sail for some place or other that I forget. Everybody was trying to help and asking last minute questions all at the same time. Through it all was running a persistent rhythm which annoyed me because I could not understand it. When I awoke I discovered that the thrashers were at it again, one at one side of the house 50 feet or so from my window and the other on the other side, singing responsively and introducing at regular intervals a

new phrase which sounded like "Wheat-wheat-----ta-taw" repeated twice. Rising inflection on the first and falling on the last, the first syllables of higher pitch than the last. This lasted for about 15 minutes more.

Greenie's
undersong.

I did not begin to look up the family until about 10 o'clock. Greenie was found all by himself at the glade and very friendly. For the first time I had an opportunity of checking up on his undersong at close range as he practiced it a few feet from me in the open. It differs little from Brownie's, though for the present at least, it is not so varied, i.e. contains fewer imitations. Its general tenor and quality are the same.

Brownie and Snooty were not to be seen, so I placed my chair at the edge of the oval lawn and waited. In two or three minutes Snooty sailed down from the upper garden (I was delighted to learn that his interest in that section continues) passed about three feet by my ear and landed like a rubber ball in front of me sleek and full of vitality. He jumped to my hand for worms, sailing off after each one with a vigorous push to arrange it properly for swallowing. During this operation he started his undersong, then retired to the shrubbery about 25 feet away to continue his vocal exercises. These were so good that after about ten minutes (as I could not see him) it seemed desirable to find Brownie and make certain that she had not stolen in unseen; so I went to the glade, after inspecting the vicinity of the singer, and found both Brownie and Greenie there digging near each other placidly. They came to hand alternately neither showing any disposition to interfere with the other's actions. As a further check I went back to the oval lawn and found Snooty still recording. His song is mostly a low, ^{pitched} varied warble with no harsh tones and no imitations. He evidently has ambitions for the future.

Snooty's
undersong.

Snooty
sings.
Checked.

Of the six thrashers here that have reached the age of independ-

All thrashers sing? ence. Brownie, Greenie, the first brood of three and Snooty--the only six mature thrashers that I have repeatedly observed at close quarters. 5 sing and the other has merely not been positively observed to sing. local The weight of evidence to date is, therefore, that all California Thrashers, irrespective of sex, do sing.

Snooty still here. During the rest of the day the birds were frequently seen, Snooty staying away from the others and showing interest in the territory which I hope he may come to regard as his own--though I think it very doubtful. A hopeful sign is that he has discovered the soft-food feeding station which I have put outside the window for him and uses it occasionally.

August 25th.

At 8:30 A.M. Brownie was in the glade and Snooty at the oval lawn, both friendly. Greenie was not seen. I saw no signs of Snooty's being chased yesterday. He is, however, alert to his surroundings at all times. All three birds were seen at various times of the day.

August 26th.

Foggy day behavior. At 8:30 A.M. Brownie was in the glade, the other two not seen. No other observations were made until 12:30 at which time Brownie was at the same place, Greenie at the oval lawn and Snooty not seen. Neither of the adults was particularly eager to eat worms. This is a foggy, chilly day. Perhaps that has something to do with it; although Brownie was at work on her undersong. I noticed a number of wing feathers on the lawn, also body feathers, any of which might have belonged to a thrasher and while I was forming a mental picture of a hawk swooping down and carrying Snooty off for good, thus accounting both for his absence and the indifference of the older birds the theory was upset by Snooty himself suddenly sailing down from the upper garden and landing about 10 feet from me and then running over to me for a worm. Greenie saw all this and darted out at

Snooty
 evades
 Greenie
 and stays on
 his job.

him from the bushes. Snooty easily evaded him and jumped up on to the blossom stalk of an amaryllis, waiting there to see what else was going to happen; but Greenie went back into the bushes. Snooty then came and took a worm from my hand and when Greenie ran out at him again simply kept me between himself and his adversary and continued to take worms. When he left Greenie chased him, but Snooty would not run far, he would jump up into a bush and let Greenie coast on by. Finally the latter gave up in disgust as he could neither catch Snooty nor drive him away and went back into the bushes after I gave him a worm as a consolation prize. While it might be said that Snooty was afraid of his parent, because he ran away from him, he certainly was in no panic at any time and his chief concern was clearly the worm and not the bird. He was not to be deflected from his purpose by any such minor obstacle as a hostile parent. Greenie, of course, is in the moult--perhaps also he does not feel very peppy; but, whatever, may have been the cause, his charges seemed to lack determination and Snooty was much his superior in agility --in fact made a monkey of him. The episode ended by Snooty staying where he wanted to stay and Greenie going back to perch in a pyracantha on the edge of the lawn where he was sitting in the first place.

This is the first successful repulse of a parent by a young thrasher that I have witnessed. ^(except in sham battle) Snooty has grown up.

At about 5 P.M. Snooty and Greenie were at the oval lawn, the former having just arrived from the upper garden. He again eluded Greenie with ease whenever Greenie attempted to drive him and did not hesitate to come to me for worms even when Greenie was doing the same thing, evidently having confidence in his ability to escape punishment.

Progress of
 the moult.

Brownie was in the glade and this time very hungry and again curious about the top of my hat. Both adults are showing still more of the blue-gray underdown, but the pin-feathers on their fore-heads are becoming real feathers now.

August 27th.

Greenie's
increasing self-
confidence.

During the day the three thrashers were frequently seen, although Brownie was disinclined to come out of the bushes for worms until late in the afternoon and seemed dull and spiritless. Greenie in a way took her place with a show of unusual interest and confidence, jumping up on to my knee frequently in a way quite foreign to his usual shyness in coming forward. He even replaced her in the matter of singing. Perhaps Brownie's holding back gave him more confidence in his ability to get the worm instead of having somebody else get there first. On one occasion they both came together (an unusual behavior) and stood by me taking worms alternately without rivalry. Snooty continued friendly and was frequently in his own "preserve".

August 28th.

Brownie regains
spirits.

Brownie was very lively and happy at about 3:30 A.M. being so intent on her undersong at the oval lawn that she would not come to me at first. After giving her a worm or two, I went to the glade and found that she had followed, as she came out to me as soon as I entered and flew up to my hand even when I was in a standing position. She was alert to everything going on; once on her short flight for a worm suddenly deflecting her course to snap at a yellow-jacket which was flying near. The other two birds were not seen on this occasion, although one of them, probably Greenie, was scripping not far away.

Thrasher
Call

Hoffmann gives this call as hreek! I know that scrip does not properly represent it, but I have never heard any of these birds in using this call give the ee sound to the vowel, notwithstanding that the call is frequently varied. As to the initial and final consonants, I do not know what they are, even after hearing it probably several thousand times, often at close range. I do not think that the call can be represented by letters of the alphabet. Doubtless a study of the bird's organs of "speech" would show pretty definitely what limitations are imposed upon the sounds which it is capable of

uttering.

Behavior towards each other. About 10:30 both adults were in the glade, both eager for

worms and hanging around me, Greenie inclined to hang back and let Brownie get them. Once Greenie said something like "yark" when his mate crowded in ahead of him and got the worm which he had, in his mind, practically already swallowed, and once Brownie said something which might easily be imagined to mean and, in fact sounded somewhat like "not for me?" when I handed Greenie a worm over the top of her head. They were very well disposed towards each other and once when Greenie had retired to about 8 feet away and Brownie had two worms she considered giving them to him, ran towards him, but finally changed her mind, possibly as Greenie was not sufficiently responsive.

Drinking pigeon fashion. On this occasion Brownie again drank in the manner of the pigeon, keeping it there and that is, immersed her bill deeply into the water, making swallowing movements of the throat, only occasionally raising her bill and then only to the horizontal. Perhaps these birds are not anatomically capable of drinking in this way, but I have watched a pigeon drink from this same dish, the same distance away, and there seemed to be no important difference. Thrashers, however, do not usually drink in this manner. Much depends upon the size of the vessel and the depth of the water. When the water is shallow and/or the vessel is small, they turn their heads on one side.

Towhee--increasing tameness. (The female spotted towhee that has the late nestlings is very strongly tempted to take worms from my hand and will usually pick them from the ground within six inches of it, sometimes within two, but is fearful of the final plunge. This growing tameness is their own ^{perhaps} doing as a result of their observations of the thrashers).

About 5:30 Brownie and Greenie were together in the glade. Greenie appears to be showing less deference to Brownie in the matter of standing aside to allow her to get the lion's share of the worms, although in coming to me, he usually looks to see if she is coming too.

Formerly, if he saw her coming, he always stopped, but today he did not follow this procedure invariably. To see how far he had progressed in asserting his rights I tossed a worm at a time about equidistant from the two birds. Brownie got most of them, but Greenie was pretty persistent and on one occasion this caused a combat in which both birds fought in the manner of barnyard cocks, confronting each other at close quarters and jumping up into the air breast to breast, striking with bills and feet. They did this about 5 times before separating by mutual consent, but there did not seem to be any aftermath of ill feeling. Greenie got the worm.

When these birds fly up into my hand when it is held a couple of feet above the ground, they tuck their legs up neatly and close their feet into compact fists every time. In view of the shortness of the flight it seems an unnecessary refinement of form! Their weight is sufficient to cause considerable impact and, although I am prepared for the shock, it is impossible to avoid dropping the hand slightly. The reverse is the case when they take off with a strong push of the feet. They do not clasp a finger strongly when sitting on it quietly, seeming to depend more upon balance of the body to maintain position. However, if they lean forward so that their centers of gravity are no longer above the finger they grip strongly. I have often noticed that birds, including the common barnyard fowl on which I used to experiment as a youngster, try to keep their heads immovable in space when their bodies are moved about by some effect beyond their control. These thrashers are no exception. Thus (provided it does not fly off) when one of these birds is sitting on a finger I can move my ^{hand} an inch or so gently in any direction and the bird's head remains absolutely stationary.

I get the impression that these birds do move their upper eyelids, but of this I am not as yet certain.

Snooty was seen only once today--about 8 A.M., although I looked for him frequently.

August 29th. Both adults were on the oval lawn at 7:25 and remained on and about it for the next hour or so. Snooty was not to be found anywhere.

Brownie's tail is fully grown out and Greenie's also with the exception of two or three short feathers at the base.

Snooty absent. 9:50. Snooty still absent. At 9:30 I went to the glade--no thrashers to be seen--but shortly a soft call overhead in the old oak directed attention to Brownie on a large horizontal limb working her way gradually towards me about 10 feet from the ground, although I had not called. Soon Greenie, who had evidently seen me enter, approached me, coming from the outside. He evidently thought he had at least a temporary monopoly of the worms, as he ran towards me with confidence and was about to jump up on me when Brownie, much to his disgust as evidenced by his opening his bill at her and making harsh noises, suddenly dropped down from the branch to the ground between us, then up to my knee, with no consideration at all for her mate. Greenie stayed where he was and I tossed him worms over Brownie's head, handing the latter a worm for each one I gave Greenie. This was satisfactory to both for a time, but finally became too slow for Brownie. She wanted to get at the box which I held out of her reach against my chest, but she climbed up there and proceeded to dig the worms out throwing the bran all over me and taking from my fingers the worms which I had reserved for Greenie. After this she sat on my knee awaiting further developments and scrutinizing the sky for hawks just as if I had not been anything more than a convenient perch.

**Drinking
Behavior**

After this she went to the drinking dish and drank pigeon fashion, getting all she wanted without removing her bill from the water until satisfied and even then her bill was not raised above the normal angle at which it is habitually carried..

Throughout the rest of the day both adults were frequently seen together. Snooty was not seen during the entire day, and it looks as if he had gone for good.

August 30th.

Gathering
nesting
material

About 8:00 A.M. Brownie came to me in the glade, took one worm, gathered up a billful of soap root fiber, ran to the old oak and climbed up into it, where she was shortly joined by Greenie. After some talk, both were seen tapping about on the horizontal limbs. They they went off in the direction of the berry-patch and paid no further attention to me.

I do not think that this means another nest. As these notes recrd, these birds play about with nesting material without reference to season. However, I have learned to expect the unexpected of them.

Snooty was not seen.

Snooty gone
for good?

7:00 P.M. Snooty was not seen during the entire day.

New talk

Nearly every time I went to the glade both adults were there, or if they were not, soon appeared. When one left the glade the other soon followed. They seemed to be keeping in close touch with each other--more than usual and talked to each other a great deal, also to me. Today their conversational tones and phrases were different from yesterday's, consisting more of high pitched polysyllables than usual and inarticulate gurglings. It also was much lower in volume when the birds were in my immediate vicinity. I doubt if ^{much of it} it could be heard ten feet away. I tried to see if I could detect a similarity in phrase evoked by repeating an action which had just caused "comment" by one of the birds. Thus, for example, if Brownie is expecting me to hand her the worm and I give it to Greenie instead, she often utters a tiny, querulous phrase of several syllables with a rising accent on the last one. I have endeavored to determine if it is composed of the same syllables each time and is, presumably therefore something that I am supposed to understand! However I have had no success. Manifestly I need a sound recording apparatus for registering voices qualitatively and a "noise meter" for making loudness determinations

expressed quantitatively in decibels.

August 31st.

Call notes About 8 A.M. one thrasher was calling loudly "Kwee'--lick, kweelick" outside the glade from the pine trees at the north boundary. The same place and the same call as yesterday morning. On coming to me one of them continued the call up to the moment of coming to hand. It is one which I have seldom heard. I would like to know its meaning. Greenie answered it melodiously, but loudly from the oaks near the easterly line and came over to join his mate. They both went off toward the berry patch in a few minutes.

Jays and racer 1:45 P.M. California Jays were making a lot of noise near the berry patch. Investigation showed that they had located a yellow-bellied racer and were following it through the bushes, but being very careful to keep up in the branches. This gives an interesting comparison with the behavior of the thrashers under similar conditions. The thrashers were not in sight, so I lost the opportunity of seeing if their dislike of these creatures (the snakes) extended beyond the nesting period. After the snake had disappeared, the thrashers came, but I was not able to get them to understand that there was a snake ~~around~~ nearby for their delectation.

Progress of moult The thrasher full song has not been heard for a day or two and the undersong seems to be receiving less attention. Brownie is getting quite respectable in appearance and is somewhat in advance of Greenie. Both birds give the impression of being lighter and more ashy in hue than before the moult. The bluish gray patches are disappearing rapidly.

6:00 P.M. Toward the end of the afternoon both thrashers sang their undersongs for many minutes. Greenie's at times approaching full song. About 5 o'clock I entered the glade with a visitor. At the time singing could be heard from some point outside. In 2 or 3 minutes Brownie came trotting into the glade, singing all the way, and jumped up to my knee with one last note, much to my visitor's delight.

Snooty was not seen at all. Undoubtedly no longer a member of the family.

September 1st.

About 7:00 A.M. both thrashers scripping and talking not far from my window, with occasional loud calls and snatches of song.

At 7:30 neither was to be seen, although I did not hunt for them.

Brownie's better appearance Due to my absence no further observations were made until about 5 P.M. At that time I entered the glade, Greenie appearing at once and Brownie in a minute or two. Brownie was so sleek in appearance that, until I had a look at her at close quarters and noted her eye color and smaller defects in plumage, I mistook her for Snooty, thinking that the youngster might have returned. Brownie wanted all the worms at once that she had missed during the day, and it was not until her insistence subsided somewhat that Greenie could get any except those I tossed to him. Even then there was one mild scuffle in which the two birds came together in fighting cock attitudes (really initiated by Greenie resenting his mate's acquisitiveness). While they appeared to peck each other, I think they really only pushed each other with their feet while momentarily in the air. The action was so fast that it was impossible to tell. Like other skirmishes, this seemed to leave no sting. Brownie commented frequently during this feeding period (not during the scuffle) but I could not catch the phrase or phrases used.

Object to towhees' presence The female Spotted Towhee with the late nest (vide supra) brought one of the new batch of youngsters and fed him at the soft-food dish. This was tolerated by Brownie for a time, but she finally drove both away a few feet where the female remained making her cat-like call in protest. This brought the male, who added his protest and then Greenie; but the disturbance soon subsided. The thrashers went away and the adult towhees came back, leaving the youngster in the chaparral, whence they carried worms which I dropped at my feet.

September 2nd.

About 8 A.M. both adults were on the oval lawn. One retired to the shrubbery and the other somewhere to the east, but still on the property. The one still at the lawn soon called : "Tor-teeka, tor-teeka, tor-teeka, quit!" The other answered : "Scrip, Scrip-it, scrip..... "

New plumage lighter 10:00 A.M. There can be little doubt of Brownie's now being a lighter shade than formerly. It is as if some of the brown had disappeared and been replaced by a light, ashy gray, for the general appearance is certainly grayer and lighter, both at a distance of, say, 8 or 10 feet and when sitting on my hand at reading distance for ordinary print.

Moult of flight feathers I would have expected, if I had thought of it, the reverse to be the case. Without forcibly restraining these birds, which I have never done and stretching out their wings to examine them in detail, it is impossible to determine accurately the method and progress of their moult. But the birds frequently, when in my company, stretch out their wings and the gaps in the flight feathers are few. I would say not more than one at a time per wing. Also I note but few new flight feathers, possibly one or two at a time per wing, but this I have not checked carefully.

Brownie tolerates competition from towhee. When I was giving Brownie worms at this time, the female spotted towhee was constantly getting worms from me also. This Brownie commented on frequently, but she did not drive the other bird away. Once or twice she left me and ran for the worm in competition with the other and when the other got it, as frequently occurred, and ran off with it promptly, Brownie watched it go with a comical air of resignation, not failing to make some remark about the matter. She would come back to me still talking and from this drifted off into a long undersong full of imitations and unexpected turns. As to the volume of sound I would say that it would be quite satisfactorily loud enough from a caged bird in-doors. I did not know Greenie was around, until doubtless inspired by Brownie's performance he struck up in similar style somewhere directly behind me where I could not see

Loudness of undersong

Agust.

him (I think about 20 feet away) and, for several minutes there was a duet, each singer, however, following his own ideas as to what the tune should be.

Brownie mocks Russet-backed thrush. At 11:00 I put fresh soft-food in the dish in the glade, seeing neither thrasher at the moment. As I went out I looked back; Brownie was running up to the dish. As I moved away I heard the song of the Russet-backed thrush coming from the direction of the glade. I thought that this was one song that the thrashers ^{might} ~~did~~ not mimic ~~as~~ I had listened and suspected it once or twice. and hoped for it many times. I went back and Brownie, who had finished eating, came out into the open where she could see me plainly and repeated the song several times. ^{while I watched and listened 20 feet away.} There can be no doubt of it. Those who know this song know that it has a timbre possessed by no other bird but a thrush--in this region at least--and a spiritual quality that makes it unmistakable. I would say that about all of the song was included but the last three or four notes--that is the notes that are seldom heard in the thrushes own rendition unless the bird is very close.

B. repeats thrush song. 3:30 Brownie and Greenie gave very fine exhibitions of sub-singing almost continuously from 1 o'clock. Brownie in the presence of a visitor of whom she was rather shy, repeated the thrush song and it was recognized as such by the visitor.

September 3rd.

Mutual relations. About 8:00 A.M. both thrashers were at the oval lawn. Greenie came for worms first and there was no interference by either bird with the other. There were a dozen or so fresh thrasher feathers on the lawn and when Brownie came to me one or two fell from her as she ran.

Falling feathers About 9:40 the two were in the glade; I was watching them from the outside, because as they were making a peculiar sound I wanted to see if there was any special reason for it and did not care to risk disturbing them. I could hear two thrashers and see only one; but that one was ~~not~~ silent. That meant three thrashers. Another thrasher appear-

ed about 6 feet from the one I was watching; this one was sleek and round-eyed. I called to it and it started towards me. I then saw that it was Snooty (by the ruff on its neck) returned to his ancestral home! I thought he was gone for good. He was not allowed to carry out his evident intention of coming to me as the two adults immediately began to head him off and drive him away, Greenie being the more persistent. There was a good deal of scripping and pursuing, but I could not see that they succeeded in driving him from the place, although they made him run away from the glade and I lost track of him. I was not able to follow to the final result on account of the arrival of a visitor, but the two adults soon returned to the glade. Snooty had not been seen since 8 A.M. of the 28th. of August--away 7 days.

At 10:50 I went to the glade, both adults there, Brownie singing and Greenie occasionally joining. During the hour and a half that I spent there the two birds were constantly exchanging soft calls and talking., when not singing. Brownie developed a new phrase in her song with which for a time she was much taken. It was "waw,waw,waw,waw", rapidly uttered. It sounded exactly like the distant barking of a dog and I am inclined to think may have been inspired by a dog which has been barking frequently this morning, I should say about a quarter of a mile away. After trying this two or three times about 15 feet from me in the bushes, she walked out and stood facing me about three feet away, looking up at me, and repeated it--almost as if she wanted to see what I thought of the new achievement. After that it was not heard again during my stay. When Greenie came out to examine prospects he had a new, very high pitched, almost inaudible "peep". Both birds used this for some time as a part of their exchange of remarks and then dropped it. Brownie interfered but little with Greenie's getting worms from me, even at one time when both were within reach of a worm in my hand, allowing Greenie to take it (the two were standing still about six inches apart) without making any effort to get it herself.

There was no snatching and running away and both birds talked about it amicably. I tried holding a worm in each hand and there was no tendency

and to poach. The talk was mostly throaty gurgles and bubbles. Some of the calls were: "Wot che-e-e-r', wot che-e-e-er?" and "Pee-ee' york".

The latter repeated and very loud when one bird was temporarily out of sight of the other and had not answered immediately to a lower call.

Neither of these calls is new. Greenie scooped a place to lie down in, in the shade and rested for about 10 minutes with eyes closed part of

the time. He was then about 10 feet away and I thought that both eyelids

were moved simultaneously, but the distance was a little too great to allow of my being certain. Brownie sat on a low branch of old-man sage

about 6 feet from him and they exchanged sleepy gurgles. (This was at practically mid-day--not a new procedure by any means). Having rested

sufficiently (from what necessity is not clear) both suddenly came out of the bushes simultaneously and confronted me, standing quietly about

5 feet away and looking up at me expectantly. Worms, of course.

3:40 P.M. Visitors arrived about 2:15. (Mr. and Mrs. Champion)

While Mrs. Champion and I looked at the garden Mr. Champion went to the glade. After a few minutes scripping of two birds could be heard

from that vicinity. Mr. Champion said three thrashers had just left, one of them having been chased out by the others. From his descriptions of

the actors, it was the two adults after Snooty. (This was later confirmed by my seeing them after him again). The birds were in an excited state

and would not come and show off. A few minutes after the visitors had

gone, both birds, of course, were as familiar as ever. Brownie broke

into almost full song, an especially fine performance in which were

strikingly good imitations of the flicker and of the song which the

meadow lark sometimes sings when in full flight. I had an excellent op-

portunity to compare the flicker notes with the original as a flicker

was in the old oak at the time and sounded some of its calls. Brownie

used two of the flicker's phrases. The Russet-backed thrush was again

Close-up imitated, but not so successfully as yesterday. The "bell song", first of bell-song noted on August 21 st. was used persistently. This is the first time I have heard it at such close range (about 15 feet). The first note was now heard to consist of two syllables instead of one as before, but barely separable. It is decidedly clear and beautiful and decidedly different from any other bird note I can recall, with the quality of a small high-pitched bell.

Attitude towards visitors About 5 o'clock 4 other visitors came to see the thrashers, but the thrashers would not come out of the bushes, although one of them sat about 30 feet away and sang its undersong 10 or 15 minutes. Two more visitors were added to the group in the glade. From the birds' view-point this did not help matters.

Snooty again Snooty was again seen, but he was very wild.

Sept. 4th.

Full-song both birds The thrashers were singing full-song in the direction of the glade at 7 A.M. and kept it up for a long time. As I approached the glade at about 8:15 both came out to me on the road. When they had eaten all of the worms both trotted off along the road toward the oval lawn. As Brownie reached a point opposite a small pine tree, a bird looking like a thrasher flew down into the road just in front of her and she put on more speed in order to chase it. It may have been Snooty, but they disappeared around a turn before I could find out. There was no scripping. A few minutes later Brownie and Greenie were seen together working their way towards the western line. Both began to scrip and the sound gradually became fainter as they went down into the canyon. at 8:35. This is the first time they have been seen to go off of the place together. This, coupled with the scripping, suggests an attempt to escort another bird (Snooty?) to a more remote region; but they may have had no other object than to get food. It will be noted that the two adults continue to keep together after the nesting season is over and that they sing during the moult.

While I was giving them worms at 8:15 Brownie got a worm which Greenie thought belonged to him. He tried twice to pull it out of her bill and on the second attempt was successful. Brownie, other than holding on to it rather firmly, showed no sign of disapproval either before or after the act.

Greenie's At 9:45 I went to the glade and called, as no thrashers were present, sub-song and away a thrasher, estimated to be about 100 feet away answered with a succession of scrips, rapidly approaching. Greenie came in and jumped up into my hand for worms. He then lay on the ground ten feet away with his back towards me, and for 15 minutes (actual timing) sang his undersong without interruption. I could not see that it differed in any respect from Brownie's any more than her own song varies at different times. During this time he imitated the cut-cut-ca-dah'-cut of the hen, the California Jay, the ya'-cup, ya'-cup of the flicker and also the whurroo of the same bird as it flies away. For about 10 minutes more he continued to sing, but with occasional pauses. When I left he was still at it.

B and G together at 12:15, on going to the glade, both adults came out of the bushes again. es at once, Greenie being first to come for a worm. By using a little strategy each got about an equal share. Brownie showing considerable forbearance, sitting on my knee placidly with little confidential gurgles and warbles. When I left both birds were "resting", one of them lying on the ground singing in a shallow basin scooped out to give greater comfort. Singing in this position causes the body to bob up and down and the tail to wobble.

((Hermit thrush and house wren here today. Mr. Sampson saw the former several days ago at his place.))

About 5:45 Brownie was digging around the oak west of the berry patch and not interested in worms of my offering. She went up into the branches and sat there "thinking" for a few minutes, then came down, picked up a twig, carried it up into the tree and placed where she had been sitting. It fell to the ground, but this caused her no concern.

~~Roosting place?~~ She moved higher into the tree and settled herself comfortably about ten feet above the ground as if she were going to stay there indefinitely. I went away, returning at 6:15, to find her still sitting there quietly. This may have been her resting place for the night. During a part of this time Greenie was scripping a few trees away. There was no exchange of calls and Greenie did not appear in the open. Soon the sound stopped, suggesting that he may have been selecting a roosting place and that these birds roost apart. (Time of sunset 6:36)

Sept. 5th.

At about 6:30 A.M. the thrashers were in full song near the glade.

~~Running rabbit exemplified.~~ At about 7:30 they were heard scripping off to the south east outside the property and out of sight. I called and whistled. One Response bird stopped calling and a bird was seen to run out on to the street about to distant 150 yards away, turn in my direction and run rapidly toward the glade. call. When it arrived it proved to be Greenie. After having a worm he went toward the oval lawn. The other was still scripping in the distance. A little more calling by me brought the other bird running along the sidewalk, but instead of going to the glade, it went to the oval lawn. It was, of course, Brownie. Greenie had run about 150 yards and Brownie perhaps 200 or more after coming into sight. Neither flew at any stage Preference for foot travel. This episode illustrates very well the preference these birds have for foot-travel over flight even for considerable distances and also their recognition of my call. Incidentally Greenie's course was in the middle of the street; Brownie's mostly near the shrubbery. While Brownie was on her way, a hawk crossed her path carrying some small object in its claws. I suppose each was aware of the other's presence, but there was no evidence of it, unless it was the thrasher's selection of route.

During the rest of the day both adults were seen frequently,

Snooty not at all.

Sept. 6th.

Up to about 8 A.M. the thrashers were in full song off towards the glade, but I did not look them up until later.

outer tail feathers moult first. It is the outer tail feathers of these birds that are moulted last.

yes, Their eyes are not circular in outline but oval (Not elliptical) with the longer axis more or less horizontal and the "big end" forward. The oval is not symmetrical about the major axis, as it is somewhat flattened at the top. There is a small triangular patch of bare, almost black skin to the rear of the eye. Their eyebrows project above the eye. This shape, together with the setting, gives character to the eye; a sort of keenness like that of an eagle.

Full song at mid-day. 11:45 A.M. I had about decided this morning to note that the thrashers used their full song at present only in the early morning hours, when, on returning just now and coming out of the garage, full song, ingeniously varied, was heard from the oaks west of the house. It proved to be about 30 feet away. After listening for some minutes I determined to identify the singer if possible. After calling a few times the song ceased, the singer descended the tree, passed a quail which was sitting just below it, ^{the ground under} came along the bushes, climbed another tree to get over a six foot wall, then came to me, still walking. All of this instead of a short, direct flight through the air.

Sleeping place (?) 6:40 P.M. Just went out to see if I had correctly spotted the sleeping places of Brownie and Greenie for the coming night, but found I had not. I thought I had them both located at 6 o'clock in their final roosting places, but they had moved.

Sept. 7th.

The thrashers were in full song in the early morning. At about 7:30 they could not be found.

Greenie's Song. About 8:30 one was singing its undersong near the oval lawn. I waited for it to come out. It climbed to the top of a flowering peach and called scrip repeatedly, then dropped down in front of me with a loud quee-lick! It was Greenie. After a meal-worm or two, he adjourned to the lawn and got cut-worms; thence to the glade, where I followed. There he sat in the bushes about 15 feet away and continued his vocal exercises, gradually working over towards me. For about 15 minutes he lay on the ground 9 feet from me and back towards me in the open and continued his song, occasionally turning his head to look back at me. He then moved to a branch about a foot above the ground about 6 feet away facing to my left continuing his song, but putting a little more pep in it so that he had to pump with his tail and jiggle up and down on the branch. When he jumped down and started to dig still nearer me and still singing, the hint was too obvious to disregard and I rewarded him with a good meal of worms, one at a time, for his fine entertainment. At first I held my hand near the ground where he would have to stretch to the utmost to get the worm unless he jumped upon my hand. As he did not intend to jump up until he got ready he would ^{just} ~~hand~~ his hooked bill over a finger and pull down in an effort to get the worm, tickling my fingers with his throat feathers and bristles at the base of his bill. Finally he decided to jump up. I left at 9:45 and he had gone back to his song. This was a very good show for the shy Greenie, possible only when Brownie was not around, as otherwise he would hold back. I made pencil notes while he was singing in an attempt to record some of his phrases and here it might be well to note that the thrasher comes the nearest to using articulate words of any of the songsters with which I am acquainted. Some of the phrases can be recorded almost exactly and are easily recognizable when repeated, it may be days afterwards. Of the undersong, it may be said, that but a very small proportion consists of imitations and phrases which can be even approximately expressed in writing, by far the larger part is made up of the thrashers own contributions.

G's mimicry. The imitations in Greenie's performance just heard were those of the flicker, the jay and the domestic hen, all soft and far away. The hen was rendered as ker-dor-kut. The flicker as pee-yulk and yay-cup. These phrases were usually uttered twice.

G's "words" Other phrases were: Tor-keeta; tor-keety; tor-keeyer; purr-ty; puro-ee-ear; pit-pur-reela; tora-keeta; pit-yurky; too-wheaty; wot-cheer; quee-lick; wet-churr; wait, wait; cherr-keet; pit-yor-kit; broke-er-rear; yurki-yurki-yurki; perfect-perfect; yurp; yurrick-klee-klee -klee; fee-male; byoo-ick. Most phrases were repeated, that is uttered twice in succession; some three times. In between recognizable phrases were innumerable warbles, trills, throaty gurgles and an almost innumerable variety of sounds. As a rough guess, I would say that the articulated sounds--or perhaps better, the "words"--were but a small fraction of the whole.

Brownie returns At 11:00 I returned to the glade. An invisible thrasher was there. Soon the missing Brownie came running in from the north and the hidden bird, Greenie, ran out to meet her, evidently glad to see her, but scolding with wide open bill. **G. scolds her.** Brownie answered and they talked a little. Greenie ran to me for a worm, Brownie stretched to her full height and scanned the distant horizon, then ran to me quickly, jumped up to my ankle resting on my knee and sat there looking at me, making little blue-bird call in **B. uses "nest approach" call in talking to me.** "pew, pew" sounds (The call used when approaching the nest) and microscopic, high-pitched peeps and trills. She patiently waited for each worm as I dug it out of the bran, digging into my ankle with her claws to preserve her balance as she reached for each worm, and behaving with great restraint and decorum. When, however, the last worm was gone, as I thought, and made no more offers, she jumped over, found the only worm there was instantly, threw out all the ~~and~~ bran and took off with a vigorous push. The two birds then loitered about the glade companionably, using the blue-bird pew mostly.

I see no signs of these birds parting company. I shall have seen them together continuously for one year on the 22nd. of this month.

G. feels lighter. Greenie feels lighter in the hand than Brownie. One of his new outer tail-feathers has been askew from the first.

**Brownie's
"words".**

About 12 o'clock Brownie took over the business of singing, Greenie being near at hand and occasionally making some slight comment. Brownie's undersong was louder and more varied. (Another reason why she may be "he" after all). Some of her phrases were: Churra-keet; whuffo-whuffo (very deeply pitched); Peet-year, liqui-clee-clee; ^{we} pee-oo-it-yūre, peet-peet; pit-we-oo-or-ee; do-we-or-kerpeēple; a sharp "pitch" it! (The squirrel); pet-ray-for---kwee-you-eet; also innumerable tinkles, gurgles etc. After this the two birds sat about 15 feet in front of me, about a foot off of the ground and 7 feet apart and dozed.

Returning somewhat after 5, no birds in sight. I heard a soft "peet-you" at my elbow and there was Brownie who had sneaked in quietly from behind me. She was soon followed by Greenie from another direction. I had not called either. After having something to eat, both climbed up the old oak out to the end of a bare branch where they sat looking off over the country for some minutes, then went off presumably to pick out places for the coming night.

Sept. 8th.

Birds away. About 7:30 no thrashers to be seen, but one heard scripping off to

G. comes. the south-east. Calling brought Greenie home again. After eating he climbed the old oak and called for about ten minutes, presumably for

Calls B. his mate. The calling was at the rate of about one call evry five or
No reply. six seconds and brought no response. During this time he picked off

loose feathers and as there was a slight upward current of air at his perch, they floated off over his head. He turned his head to watch them sail away.

B. still away. About 9:30, as Brownie had not returned and I suspected that she

might be over near where Dr. Reynolds is building his house, I went over there. This is about three hundred yards away across a valley and on the other side of a hill facing Diamond Canyon and at about the same elevation, directly south east. It was from that direction that Greenie came this morning. On account of its topography, location and natural wild growth this is an attractive place for birds and the doctor--a bird-lover--is making it more attractive to them by feeding station, etc.

Brownie(?) Almost at once I saw a thrasher digging in the ground outside the fence. **ound 300**
ds. away. I called to it. It stopped and looked around in all directions. At that moment a Japanese workman started a huge, crackling brush fire between the bird and myself, so I learnt nothing, as the bird disappeared promptly in the surrounding thicket.

loses infer- When I returned to my own place, Greenie was the only thrasher **ority com-**
plex. to be seen. He is a different bird when Brownie is away, hopping about me, climbing up into chairs to reach me more easily and singing. He was bursting with song; this time in no way inferior to Brownie's, using phrases many of the same phrases and talking to me confidentially between songs as he pecked about my chair. If it had not been for his eyes and skewed tail-feather I would have thought it was she.

B. returns. 12:30 P.M. About 11:40 I went to the glade finding Greenie there. **calling.** About 5 minutes afterwards scripping was heard off to the south east. I looked in that direction and a thrasher was running on the street about 120 yards away, approaching rapidly. Greenie had answered the call when I first heard it and continued to call, moving to a small tree at the side of the glade nearest to the approaching thrasher and sitting about 8 feet from my head. Of course it was Brownie coming home. She was undoubtedly the bird I had seen over at Dr. Reynolds'.

G. On entering the glade her first act was to take a long drink, **answers.** then a little soft food, then to jump up into my lap without waiting for an invitation and make little wheedling noises. I handed her a worm at a time which she took hungrily, but waited patiently for me to

B and G
talk.

to dig out each one. Greenie was glad to see her and came closer, still in a low branch of the tree. Brownie joined him there and they talked a little, then dropped to the ground, ~~Greenie pattering about Brownie~~ ~~going to her two favorite branches in the sage~~ puttering about

B's
antics in
getting
worms.

for a few minutes, when Brownie decided to investigate the worm situation again. ~~As~~ I did not offer her any, but held the box ^e beneath my hands in my lap where she would be compelled to stand almost on her head to get them. She tried every possible angle, gripping my fingers and hands with her sharp claws which left white scratches all over the back of my hands when she slipped, as she frequently did, until she discovered the only practicable position was head straight down and tail straight up under my chin. In this way she got all the worms and, after ~~3 doses~~, sampling a button, retired for a nap 10 feet away.

Eye observa-
tions.

During this her eyes would close slowly and remain closed for a time then open at some sound, and sometimes remain partially closed for a considerable length of time. I watched them closely with glasses magnifying $3\frac{1}{2}$ diameters, thus making the bird appear somewhat less than 3 feet away. The head of the bird was in a bright beam of sunlight.

Both lids
move.

It soon was evident that both eyelids are movable. I watched for about ten minutes, during which time the lids were moved ^{very slowly} many times. The lids are capable of independent movement. In closing the eye most of the time the lower lid rises ^{first} ~~to what appears to be its~~ and it may or may not be followed by a corresponding movement of the upper lid. The line of closure may be anywhere, that is: across the pupil, above it, or below it. This fact alone shows that both lids must be movable; but in addition the movement of the upper lid is also easily seen. It is, in fact, frequently moved, as in winking, without the lower one moving at all. These birds wink often, but until now I have not been positive that it was not the nictitating membrane that was concerned, although I had frequently noted in the past that they seemed to wink like mammals that the "wink" came from above and that whatever it was that moved, it

was of the same gray as the lower lid, and thick. (This needs further confirmation before positive statement.)

At the moment I do not recall having seen the nictitating membrane of these birds except when they are "sunfitting"; then it is brought into frequent action. (See below)

I checked up on this about 2:40 by holding my hands in reading position and Brownie very accommodatingly jumped up and took the place of a book. She did not wink with her upper lid, but the nictitating membrane flickered across her cornea frequently, but so rapidly that it was like the shutter of a camera. A minute or two after Greenie was on my hand by my side and the same thing was noted in him.

Comparative eye color. There is still the same difference in eye color between these birds.

Their eyes are beautifully clear and bright.

Sept. 9th.

Full song. The thrashers were heard in full song at 6:20 A.M. near the house, moving from place to place. This continued for a little over 2 hours.

about
At 8:30 one was seen to fly up into a pine about 100 feet away at the north boundary and perch about 30 feet above the ground. I called to it and it ran out along a limb which pointed in my direction, slipped and hung for a few moments by its hooked bill, fluttering to regain its footing, thus applying a healing balm to my inferior¹ty complex in the matter of grace of movement. I walked toward the glade and the bird sailed down into it, getting there first. It was Brownie, willing to climb over me any place for meal-worms. Greenie did not appear, so it looks as if, for the time being at least, these birds have decided that one of them must stay home mornings.

I was away until about 12:15, finding Greenie in the glade singing undersong. Brownie came a little later.

Sept. 10th.

Thrashers at Dr. Reynolds'. No early morning singing was heard and at 7:30 there were no thrashers to be found. I went over to Dr. Reynolds' place to see if they were there, shortly before 8:00. Soon I saw two thrashers on the next

(Robinsons)
property and tried to induce them to come over the fence to me, but could not arouse their interest, nor could I get close enough to identify them. On my return the birds were still absent, so that the two may have been Brownie and Greenie, too shy to come to me in unfamiliar surroundings.

Birds return. On completing the foregoing paragraph about 9:45 I went outside and heard the thrashers scripping in the distance. I saw one of them in the street about 200 yards away, whistled and called. The other then appeared and both started for "home" like race horses in the open street. By the time I reached the glade they were almost there. As soon as I got seated, in they ran, both talking at once. Brownie jumped up into my lap immediately and, I gathered, tried to tell me all about it, Greenie putting in remarks from the ground near my feet. He still holds back for his mate. The point where they were first seen was exactly in line with the point where I saw the two thrashers about 8 o'clock and I think there is little doubt that they are the same birds.

Roosting place(?) About 6:20 P.M. (Sunset, 6:27) I located one of the thrashers sitting quietly about 10 feet from the ground in the same oak where I have suspected them of spending the night. I intended later to go out with a flash-light and see if it was still there, but forgot it.

Sept 11th.

Full-song Thrasher full-song was heard at intervals during the early morning and up till about 8 o'clock. At that time I went out and heard them calling in the distance to the south east, apparently having just left. I called and one bird flew out of a tree, ^{in the Robinson place} about 200 yards away, to the street, ran across a vacant lot and when it reached Selborne Drive, was joined by the other, and both ran along the street from a point about 120 yards away towards me. I went to the glade and the scene of

Birds use same phrase in talking. yesterday morning was duplicated, except in the present instance, Brownie, talking on my knee, used a phrase not previously heard, repeating it over and over, and Greenie, on the ground used identically the same phrase,

New
phrase.

as near as I could tell. Despite the repetition I could not catch it, but it was reminiscent of the ka-dah-cut previously recorded, but with a reedy quality and some n sounds in it someplace. Yesterday, when they talked on their return, they had been away a long time. Today they were just leaving. The logic of the situation, considering their greater excitement and loquacity of yesterday, would suggest that, yesterday, they were trying to tell me all about their experience and, today, that ^{were} they just going to the same place when I called! (See 10 o'clock entry).

Robinson
place.

The Robinson place consists of several acres on both sides of a ridge with a great deal of the natural growth remaining. The eastern slope runs down into Dimond Canyon and is an ideal place for birds, particularly ground feeders, being partly wooded with open places to scratch in and undoubtedly plenty of insect life, such as Jerusalem crickets. Dr. Reynolds says that these insects are plentiful at his place. His northerly line is the southerly line of the Robinson place.

Efforts to
locate place
to which birds
go.

At 10 o'clock both thrashers were at the oval lawn, so I went over to Dr. Reynolds' --no thrashers. West of the Reynolds property with separated from it by a brick wall, is the house of Dr. Covell, so that from my place the Reynolds house is directly behind Covell's.

Birds seen
at
Dr. Covell's

The gardener of the latter place, seeing me looking for birds, said that for the first time, he saw this morning two large birds with "crooked" bills digging in his moss patch. (*Arenaria caespitosa*). On comparing times, it was evident that these were probably Brownie and Greenie. I told the gardener that they would roughen up his moss, but that they would get his cut-worms and he seemed satisfied with the arrangement.

Meadowlark
imitation.

I neglected to note yesterday Brownie's introduction of the song of the meadowlark--not the flying song previously recorded--but one of those usually heard, there being several.

11:50. Talked with Dr. Grinnell over the phone a half hour or so ago. He will be here with friends this afternoon. He asked if the birds were singing more or less than before. I assumed that he meant

as compared with the last few months and answered: "Incomparably more", but in the early mornings for full song and "almost all the time" for sub-song; that they were ranging farther now and since the young had been driven away, the food problem was less acute, hence the birds are not coming forward so freely in the presence of a number of persons.

I went out to the glade about 11:30 to see if they were at home. They came out of the brush in a few moments both exchanging the same phrase which sounded rather like quiri-kalee-kalee, but it is impossible to write it, or for that matter, even to catch it. Greenie came to me for worms, but Brownie found something attractive at the base of a sage and dug in one spot for fully ten minutes. Greenie retired into the bushes and rendered a long sub-song of fine quality. Brownie was inspired to emulate this, but continued digging. Then, much to my delight, full song.

Greenie, about 20 feet away, burst out into full, rich, deep, song of splendid quality lasting for about half a minute. Brownie came to me and stood with one foot on one hand and the other on the worm box and allowed me to pull my hands apart until she was doing a full "split". She then ran to join Greenie in the bushes and they made noises at each other at first, then talked more sensibly.

I was particularly pleased to get this further evidence of Greenie's singing ability as, since last recorded in these notes, I had not had him positively isolated and located definitely in full song, so was beginning to wonder if I had been bearing down a little too strongly on the fact that both birds sing full-song without getting additional confirmation. (12:15--one of them is at it again in full song).

I was also pleased to get this evidence of his mid-day singing. This is not, or has not been, a common thing with either bird in the last few months.

B catches a butterfly. I neglected to record yesterday that Brownie caught a Painted Lady butterfly by my chair and, after battering it around a little, swallowed it wings and all. The powdery scales from its wings were seen to float

off in the air in surprising large quantities. For some reason Greenie seemed to take a special interest in this capture and was disposed to demand his share, but Brownie, after settling the matter by swallowing the butterfly, aimed a substantial peck at Greenie and he retreated. When Brownie moved elsewhere, Greenie went to the place where she had hammered it on the ground and examined the spot carefully, stirring the earth with his bill.

Vibratory head motion. 1:40. For the first time I have just witnessed the rapid, vibratory movement of the head and bill, previously noted in connection with these birds, put into operation with the bill inserted in the earth. Its object was obscure.

Arboreal antics. Brownie has been sitting in a tree using the bell motive in her occasional soft calls to Greenie on the ground below and Greenie has been running up to her at intervals, both of them then opening their bills making various sounds--some of them harshly sibilant.

Both birds doze. 2:30. I went to the glade at 2:00. Brownie and Greenie soon entered, the former to lie on the ground in the partial shade, and the latter to sit on one of the two favorite Old Man branches close to the ground. Both dozed, but at intervals of a half minute or less, one would say something and the other would answer. Greenie was back towards his mate and once or twice when he spoke first he would turn his head and look at her in anticipation--as it seemed--of the reply. It was all very human. After about ten minutes Greenie was the first to think of worms, followed shortly by Brownie. When Brownie sat on one hand waiting for a worm, I said to her: "What do you think of the weather?" She said something that sounded somewhat like "A little bit doorty".

Dr. Grinnell and party. 4:30. Dr. Grinnell and his party have just left. The thrashers were rather shy, but present. Brownie, with some coaxing, jumped up into my hand for worms once or twice with my guests sitting with me, but was not too keen about coming. Greenie would not come much closer than about 10 feet. Both did a little undersinging, but were not at all enthusiastic.

astic about it. The birds were not frightened; but as they were not critically in need for food, saw no reason why any risks should be taken. However, they hung around the glade all of the time, dug, and Greenie dried himself and preened in full view about 15 feet away after having had a bath somewhere. They were friendly, but indifferent.

While we sat there the female spotted towhee (and one youngster) and a Vigors wren took worms tossed to them. A sparrow hawk flew about the pine about 75 feet to the north, calling loudly, but Brownie who was digging in an exposed position at the time did not seek cover.

Night roost. 6:10 P.M. A thrasher is now sitting on the same limb of the same tree as last evening.

7:10 P.M.. It is still there. I could not tell which one and was not able to see the other. The foliage of the tree is rather dense and the reflection of the flash light from the leaves and twigs make it difficult for the sight to penetrate deeply. The bird did not stir. I could not see its head. Droppings which have accumulated on the top of one of the branches to the depth of perhaps an inch show that this place has been frequently occupied.

Sept. 12th.

A gloomy morning following a gloomy afternoon.

Greenie At 7:30 A.M. both thrashers were in the vicinity of the tree in which sings full-song in one of them roosted last night, discussing something. Greenie then flew gloomy weather up into the pine tree (the one where the sparrow hawk was yesterday) and sang his full song beautifully, Brownie sitting on the small lath-house.

One of Greenie's succession of phrases (with apologies to him) sounded like tor-wit, tor-wit, torpeeto, torpeeto---cleecleeclee, ware, ware. The clees were uttered in rapid succession with a rising inflection as if it were a question. The ware had about the quality of tone and pitch of the male quail's single call when he is on guard duty, and the same loudness. A quail was calling at the same time from the lower branches of the same tree: sa-pah-toe (zapato) and one who had never heard

Volume
compared
with
quail.

either bird might easily have thought that there was but one performer present.

I then went to the glade, both birds coming soon. Brownie caught sight of the soap-root fiber which I had been showing my visitors yesterday and proceeded to gather it up carefully with little whines and mewings. She considered taking it up into a tree, but finally dropped it. Although she had had only one or two worms, the incident of the fiber seemed to take her mind off of food entirely and she climbed up into the branches where the first nest had been built, where she rustled about for a short time then disappeared toward the berry patch, soon followed by Greenie. The nest-building instinct seems never to be entirely submerged in these birds, especially in Brownie. Now that Greenie is coming to the front as the loud singer and Brownie is acting more domestically, Brownie regains her position in my confused mental state as "she" and Greenie, perforce, "rebecomes" (If there is no such word, there should be) the male until both change about.

At 9:30 when I went to the glade, both birds appeared quickly from the bushes. Brownie's talk had as its base the "hen motive", somewhat altered, consisting mostly of tsick-a-daw', tsick-a-derro with plenty of filling in between. She also "called the dog", with a low melodious whistle "whee'-oo-whee'-oo-whe-oo" and answered it herself with a surprisingly deep toned "row-row-row". All this while ~~jumping up~~^{coming} for worms or playing about my feet. She then retired to the favored sage branch and became drowsy. The upper lid could be seen slowly descending to meet the lower. She then moved to the other favored branch to the left and practised undersong until Greenie, who had been digging industriously 10 feet to my left, suddenly asserted himself, ran at her with a snarl, drove her off two or three feet and went back to his same digging operation. Brownie resumed her undersong on the ground, but soon rushed at Greenie, aimed a peck at him and took possession of his excavation (a frequent occurrence) turning her back on him. He

then reached forward and pulled the end of her tail without her retaliating,

ating, then ran directly to me for worms. Brownie, seeing that she was missing something, soon followed, but there was no conflict between them. Greenie, however, went back to the same excavation. He seems to be getting more assertive.

(This song)

Under-song on terrace. 1:35 P.M. Brownie and Greenie have chosen to move up near here for some reason best known to themselves, since the foregoing record. One of them is singing near the glade at the present moment, and since 11 o'clock it has been practically continuous song. Almost a full hour of this was spent by Brownie sitting on the stone terrace outside this window and singing ~~the song~~ practically all of that time. I went out and sat there for about three quarters of an hour during which she stood facing me on the floor six to ten feet away singing single mindedly, indifferent to prof-

Imitations fers of worms, with tail bobbing up and down. The recognizable imitations (with no stretching of the imagination) were: California Jay, Red-shafted Flicker, California Quail, Western Meadowlark, dog calling, dog barking, Russet-backed Thrush, domestic hen. There was also the bell song.

Thrush song. The thrush song was given not less than 20 times--each marvellously perfect. Anybody who knows the song of this bird would be completely deceived. To be able to imitate the timbre of the voice of the thrush is a distinct achievement. (There it is again, 1:55. Brownie is certainly wound up today). She has come up to the terrace again, still singing. This song is much more than a "whisper song", though it is rendered with

Distance heard. bill closed. As an illustration of its loudness, the "thrush song" is plainly recognizable at 75 feet, notwithstanding the sounds of air, water and street traffic which ~~are~~ ^{were} practically continuous at the ^{time of observation.} ~~present~~

2:15 Still singing

This kept up until nearly 3 o'clock, when the birds wandered off to a different part of the garden.

Night roost. 6:15 P.M. One of the thrashers has just climbed up into the oak where it roosted last night.

9:00 P.M. The thrasher is sitting in exactly the same place it

occupied last night, that is within 2 or 3 inches of the same place. Its head was not under its wing and it did not move while I was looking at it. It is perhaps somewhat less than 10 feet above the ground. I could not see evidence of the other one perching near. I shall have to locate the tree it is in by watching where it goes when it has finished feeding for the day. I suspect that it is in a tree about 30 feet east of this one. This bird I think is Brownie. (I.e. the one just located).

Sept. 13th.

I went to the glade at 8:30 A.M. There were no thrashers in sight, but after a few calls I was answered by a scrip from the chaparral outside the fence. Soon this was taken up by another bird and both thrashers came running to me for the morning worm, though I had noted in passing the oval lawn that, possibly due to my tardiness, they had been ^{silently} busy on their own accounts. Brownie's talk at this meeting consisted mostly of a soft woor-roo followed by a couple of infinitesimal inarticulate sounds. In order that Greenie might get his share, I offered worms with both hands. Greenie went off 10 feet to dig and when he got a hole well started, Brownie ran over to appropriate it. Greenie crouched down with wide open bill, just like a youngster and backed away, but said nothing, out loud at least, as Brownie took his excavation and turned her back on him. Greenie bowed his head toward the ground, opened and closed his bill exactly as if talking to himself pettishly, made one peevish snap at the tip of Brownie's tail and came towards me. It is exactly what I would have felt like doing myself under similar circumstances. I have no doubt but that if one knew the thrasher language and understood bill-reading, he would have found that Greenie was cursing Brownie for her cheek and himself for his timidity--but silently so as to involve no risk of retaliation. The snap at her tail was not a serious effort either, just a gesture. Brownie probably knew nothing about it; anyhow she ignored it.

New talk.

B takes
G's hole.

G peevish.

Snaps at
B's tail

12:00M.

's mimicry.

"Kiss call"

I heard thrasher sub-song coming from the glade at about 11:30, so went there to listen. It was Brownie up on a horizontal branch of the old oak. She was giving one imitation after another in rapid succession, all mixed up together. To the whistled call for the dog this time she was adding that sort of prolonged kissing sound which some persons use in trying to attract the attention of animals, but the hypothetical dog did not answer. Greenie came to dig at the top of the bank on the north side of the glade and Brownie came down to the the floor and began all over again. Her mimicry of the russet backed thrush was especially convincing.

G rolls stone.

They discuss
in
pantomime.

While she was thus engaged, a stone, released by Greenie came rolling down the bank, blup, blup, blup, stopping not far from his mate. Brownie immediately ran up the bank and they argued the matter in pantomime--no sound beyond the original interchange of h-a-i-hs when she arrived. This soundless exchange of remarks, in which first one bird and then the other opens and closes its bill while facing the other--it seems to me--must be some form of communication, like the Morse code with flags or wig-wagging.

Weight of stone.

Comparison
with man.

I picked up the stone and weighed it. It weighed $1\frac{3}{4}$ pounds exactly. Roughly this is of the order of seven times the weight of the bird, or expressed in human equivalents: Greenie's effort equals that of a hundred and fifty pound man digging up a thousand pound rock with his nose, lifting it out of the excavation and starting it down a hill, all with the same implement! To be quite fair to the man we should grant him a nut-cracker arrangement of nose and chin, like Mr. Punch, say 2 or 3 feet long and made of tungsten steel. With this equipment allowed, it will be appreciated how deficient he would still be in muscular processes.

Nicholson's Bird
Watching.

12:30 (Received by post from Dr. Grinnell his personal copy of Nicholson's "The Art of Bird Watching", a work with which

I am not acquainted.

Imitation
worms.

3:30. I made some imitation worms out of soft food, suet, corn-oil and a little flour and water all heated together in a water-bath. This gave a mixture that was fairly elastic when cold, making very respectable worms. I went to the glade and the thrashers immediately ran out of the bushes to me. Brownie jumped up to my hand to inspect the two "worms" I offered, but would not touch them. I offered them to Greenie with the same result. When I put meal-worms with them they picked out the real worms. When I tossed them to the birds they would run for them and Greenie would pick them up, but neither would eat them, although the Nuttall sparrows did.

Thrashers
refuse.

Sparrows
accept.

B&G playful.

The two thrashers have been very lively and playful today, chasing each other through the bushes, dashing at one another sometimes from distances as great as 20 or 30 feet and playing hide and seek like young birds. Greenie several times tried Brownie's tactics, rushing up to her when she had a good prospect hole, seemingly in the hope that she would retreat and let him have it; but she usually ignored him completely and his rush ended tamely.

4:30. The birds are still unusually lively in all their actions. Greenie picked up a thick, heavy twig and dropped it in front of Brownie as if he were inviting a chase as dogs sometimes do. Brownie did not respond, being engaged in a new prospect hole, but shortly they gyrated around an old-man sage evidently in play. Brownie about 5 o'clock discovered an Argentine ant hole and dug rapidly, eating the pupae (and presumably also the ants carrying them). The ants crawled up her legs and she picked them off. Some I could see disappearing amongst the feathers and I expected some pyrotechnics, but she seemed to ignore them for the most part, although she did occasionally come out of the hole she had dug, pick off a few ants and return again, much as a man who is tending a smoky bon-fire comes out for fresh air. She did not finish the job,

B and ants.

as there were plenty pupae left, but found another nest immediately and followed the same procedure with this one.

About 5:15 one thrasher went into the brush in front of me and one about 20 feet behind me. The latter began a long under-song. As I did not know which bird was which, I listened intently. It was a very good song, but with few imitations and I decided it was Greenie--rather regretfully--as it would compel me to admit to myself that his song was inferior to Brownie's--at least for the time being. However, when the bird came out to join the other one, it proved to be Brownie, thus, I think, tending to confirm the belief that, over a period of time, there is no fixed, recognisable, constant difference between the songs of these two birds.

Undersongs compared.

Tentative Classification of thrasher songs.

4 Classes.

Whisper song.
(Quarter-song)

I do not know whether there is any standard^{practice} of general recognition for classifying bird songs. My acquaintance with the literature on the subject--if there is any--is nil. Leaving out calls^{can} conversations, alarm notes, etc., it seems to me that I_A clearly^{with these two thrashers} distinguish_A four different classes of song. By song I mean something^{notes} that is sustained, not merely a few_A more or less ~~notes~~ uttered at random without unity, but a continuous musical performance.

First there is a low, continuous, soft warbling and bubbling song, without mimicry and without distinguishable phrases, i.e. phrases that can be represented to a certain extent--as to vowel sounds and rhythm at least--in syllables, by letters of the alphabet. This song is occasionally punctuated with a few almost insect-like, high-pitched sounds which seem to be forced out as if the bird were holding all of its muscular system in a state of tension. When one of these sounds is heard the bird's throat does not pulsate. With a larger animal it might be a whine or even a squeal. Except for^{kind of} this particular_A note, the song is^{wholly} pleasing and exceedingly varied. It is an inward song and, I think, can be properly classed with what I hear called a whisper-song. Although I certainly consider

there is no resemblance whatever to a whisper in it, with these birds. However, call it tentatively the whisper song.

Night roost. (6:35 P.M. The thrasher is roosting in the same spot again. I neglected to note into what tree the other bird retired until too late).

Half-song. The next type of song is considerably louder, but is of the same general character as the whisper song. In it, however, one begins to catch recognisable phrases and imitations that are somewhat slurred. In other words, one cannot say with strict accuracy that "that was the song of the so-and -so", but "that sounded like the song of the so-and-so". The bill remains closed. *(imitation - don't know)*

Three-quarter song. The next type is between the foregoing and full-song. It is filled with imitations and recognisable phrases, ingenious turns and unexpected contrasts. It approaches full-song in volume. The bird appears almost in an ecstasy and devotes itself to the song single mindedly, with comical earnestness that makes one chuckle in appreciation at each new turn. The bird pumps its tail up and down and will ^{often} stand directly in front of me 2 to 10 feet away looking directly at me and continue with no interruption whatsoever for half an hour or more. Unfortunately none of my visitors has ever heard this song, for it is a delightful performance. The birds will not sing this way before visitors. The phrases previously recorded in these notes are taken principally from this song, but it must not be supposed that they ~~they~~ furnish, even with the imitations included, the major portion of the song. Far from it. As a rough guess, I would say that they make up not more than one tenth of it. The remaining portion doubtless contains many imitations which I do not recognise, as I know the calls and songs of but few birds. The "filling" is full of rich tones, with tinkles, liquid sounds, rolling r's, ells and some ens, and it must be admitted, some harsher sounds; but these all add to the interest of the performance by

lending variety and spice.

Full Song.

The fourth type is the full song, brilliant and powerful, rich and varied when heard nearby. At a distance most of its charm is lost. It is primarily an amplification in volume of the preceding, ^{except} but as yet, I have heard little mimicry in it. Like the preceding its range in pitch is great. Anyone hearing it nearby for the first time invariably exclaims "What's that?" This is usually followed by the statement that he never knew that there was such a bird. It can undoubtedly be heard for a quarter of a mile, possibly even farther under favorable conditions. I have heard it plainly 300 yards away, but its beauty is ^{mostly} gone under such conditions. It is like looking down upon a landscape covered by fog with only a hill-top showing through here and there. That is a beautiful sight, it is true, but the ^{fair} ~~kind of~~ enduring beauty is concealed.

It might be said that these thrashers have a full song and three sub- or undersongs of the same general characteristics, merging into each ^{other} more or less and differing from each other principally in volume, brilliancy and ^tvariety of expression. They might with propriety be classified as full, three-quarter, half and quarter song without doing too much violence ^{to} quantitative exactitude.

Singing points. (Locations)

Full song usually is heard from a perch at least ten feet above the ground at this place, and from there up to about 50 or 60 feet, although the latter heights are unusual. The bird is usually in plain view, or at least not concealed. From my observations so far it is never sung on the ground. It is heard usually during

Time of song.

the early morning hours here, but, as recently recorded, sometimes at any time during the day. I have heard it in the rain, but never at night. It is ^{less often} seldom heard during the nesting season, but frequently before and after, even during the moult. I can not say that one bird sings while the other is on the nest, or when

Heard in rain.

the first, or any other egg is laid; or when the first chick is hatched. In fact I recall no instance (perhaps the notes on examination will show otherwise) of any connection between full song and nesting activities, other than a negative one. That is, song declines with the beginning of nesting operations. Full song is not a common occurrence here; even in season--which seems to be now--there will be some days when it is not heard at all on this place. Maybe the birds go elsewhere on those days at the particular time chosen for singing, although this seems doubtful.

Full song uncommon.

Full song sung by both sexes. No difference in quality. Both sexes positively sing full song and it is not possible in quality to distinguish sexes by any differences in the two songs. rare

Invader stimulates full song. It has been noted on this place that the appearance of an invader has stimulated full song on the part of the repelling birds. This

Full song is "wild".

song appears to me the exact antithesis of the song of caged birds. It is wild and free. It always seems to me as in the nature of a call seeking a response of some kind, and perhaps it is. (These

Antiphony

notes record an early morning antiphony where the two birds were on opposite sides of the house). This conjecture is to a certain extent supported by the fact that the full song and the undersongs

Undersong not training for full song

are heard at the same season of the year from the same individuals. Thus the undersongs do not appear in anyway as preliminary approaches

Both sexes sing either at will.

to full song--periods of practise. Either Brownie or Greenie can and does sing either undersong or full song as occasion demands.

Hence, as each has this varied repertoire to draw upon, there must be some reason for the selection of a particular type of song at any given time.

Three-quarter song when contented.

The three-quarter-song phase of the sub- or undersong seems to me to express best of all the bird's pleasure and contentment with its surroundings and state of well-being at the time. When the bird is well fed for the time being, is comfortable in mind

*Modify this. Not quite

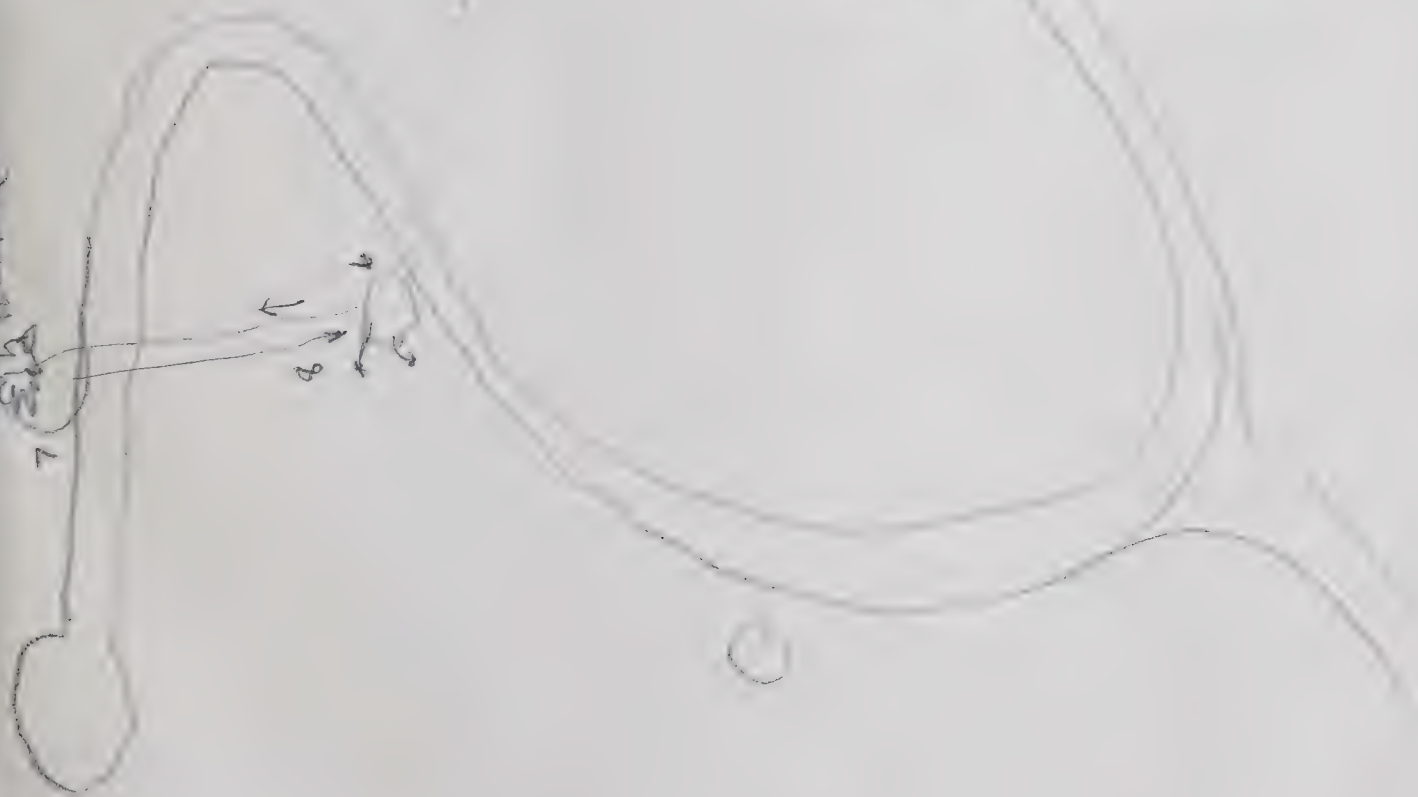
and body, has no duty to perform for its young and there are no exciting alarm calls to disturb it, knows where its mate is and is without fear, then, I think, the three-quarter song is called upon to express its reaction to these stimuli. It will be noted that this set of conditions dovetails into an occasion when I have just given both birds all the food they want in the glade and there are no strangers present. This song, while less spectacular than the full song, is the one that keeps one on the alert for unexpected, new developments and in many respects, the most interesting of all. It is heard very often at the present time, but practically never during the nesting season.* (I do not know whether "nesting season" is the technically correct term or not. What I mean by it is that period of time beginning with the building of the first nest and ending with the last feeding of the last youngster).

Half-song the ~~digging~~ song. The half-song phase of the undersong is preeminently the digging song, although either of the other undersongs may be heard while digging, and the half-song often ends up in the three-quarter song. The thrasher is the greatest sing-digger or dig-singer in my experience. He does not always sing while digging, but I am inclined to think he seldom fails to do so if the results of his operations are agreeably up to expectations and he is without pressing anxieties at the moment.

Quarter-song". The quarter-song phase often precedes either of the other phases before conditions have reached the point where more elaborate expressions are required to match the rest of the picture. It also may follow either of them as the bird's activities decline and a state of repose is approached. Thus he may stretch out on the ground and become drowsy or perch on a low limb and take a series of short naps. The quarter-song becomes a preliminary of such inactivity and finally as the bird closes its eyes becomes a detached series of short bubbles and gurgles, often in reply to

+ Modity

7. Elbow



3
2
1



similar expressions on the part of its mate nearby. It is then a rather passive form of expressing comfort and here, also, verges upon "conversation".

Sept. 14th.

Morning song
missing.

Locate 4
thrashers in
"Reynolds Ter-
ritory".

Full song at
close range.

Full song
imitations.

Sung in fog.

No early morning singing was heard and at 7:30 no thrashers were to be seen, so I went over to Dr. Reynolds' place to see if any could be located. I located four: ^(2 thrashers) None of them would come to me. One of them was an especially brilliant singer and allowed me to approach to within 25 feet of him, where I stopped to listen. He was in the open about 10 feet from the ground facing me. He sang continuously for about 10 minutes, then left unhurriedly. I tossed worms in front of him, but he disregarded them and no amount of coaxing had any effect on him. I do not think he was either of my birds, but he may have been. He introduced two imitations, the flicker and the quail. I have not heard a finer thrasher song. Incidentally this was a foggy morning. This bird was south of the Reynolds' house, about 75 feet away. Two more were seen 100 feet north, but were indifferent to enticements. One had missing feathers in the middle of its tail, so was neither of mine. Another was singing in the bottom of the canyon to the East. As I returned to my own place one was heard scripping at the Robinson's, but it may have been one already counted. Calling from the vicinity of the glade ^{on the same morning} was followed by cessation of the scripping and beginning of full song, seemingly on the part of the same bird; but no birds came.

Failure to answer
calls not proof
that these
birds were
strangers.

The fact that none of the birds seen would come to me does not, of course, prove anything as to their identity. ^{My birds} ~~They~~ are not used to seeing me anywhere except at my own place. Here I am a part of the surroundings and my actions are taken for granted. Elsewhere I am a part of the surroundings there, and in those surroundings my actions in offering food, etc. are not a part of the usual

picture with which they are familiar, hence they do not attract favorable attention. This is merely a speculation.

Thrashers return. 9:45. At about 9:15 the fog had cleared away and scripping was heard off to the the south east. Soon one bird was seen coming down the street, then the other. I went down to the street near the entrance testing fore- and called. Greenie, the first bird, ran right on by me and up to the glade with only one slight pause. Brownie, who was more than 100 feet behind him, paused several time nearly opposite me, then ran about 30 feet by me, paused again, turned back and came to me hesitatingly, very alert and wary, with all her feathers held close to the body, looking very slender and trim. She jumped up for one worm and then ran rapidly away. I went immediately to the glade. Neither bird had arrived, but appeared in less than a minute. Here I fitted into the picture properly and both birds expected (and got) worms from me. Brownie then began collecting soap root, dropped it, then climbed up where the first nest was built. Greenie remained to dig a good hole near me and then joined Brownie. In a minute or two more they were out of sight someplace. This action seems to fit in with the speculations of the foregoing entry.

Thrasher rests in night perch. 10:22. About 3 minutes ago it occurred to me to look in the thrasher's sleeping place just located and see if, by any chance, that was where they had gone, not thinking that there was one chance in a thousand to find them there. However, much to my astonishment, one of the was occupying the exact perch, as proved by the accumulated droppings. The other was not seen, although now (10:26) I hear one calling queelick just to my left, probably about 75 feet away. I could not identify the bird in the tree as I can not distinguish them by worm's eye view.

10:39. At 10:30 the bird from the ^{direction of the} roosting place was seen to enter the glade, so I went there. It was Brownie. Almost immediately Greenie entered from the direction in which the 10:26 call was

heard. Both came to me at once and I gave them both worms, neither seeming to resent the other's presence. Brownie repeatedly used a phrase which contained the syllables pee-low (o as in cow, the last syllable deep toned and throaty). This was sometimes followed by a very soft quit. Greenie countered each time with an indistinguishable assortment of rippling sounds. He then picked up a soap-root fiber which Brownie demanded and got. Both then collected a willful and made for the first nest site. I could not see whether they carried it up into the tree or not. I do not think that this means another nest; but there is plenty of time to find out. Usually, since the nesting season has ended, when they have picked up material in this way, the bird acts just as if it were going to do something worth while, but one can see its resolution fade out and the bird seems to be momentarily uncertain as to its next move when the material has been dropped.

No further observations were made until about 5:40 at which time ^B dropped down from a tree behind me in the glade, took only 2 or 3 worms and immediately went toward the roosting tree. When I got there she was sitting quietly on the regular perch. As I watched her she closed her eyes. This is unusually early. While all of the tree and its surroundings were in shade cast by trees farther to the west, it was bright and warm.

Sept. 15th.

At 6:45 A.M. thrashers were singing in the direction of the glade.

At 7:15 there were no signs of them in the glade, so I went over to the Reynolds Territory. One thrasher was singing loudly from a pine and another about 50 yards away digging. Neither paid any attention to me. I could not identify them. When I returned here about 8 Greenie was at the oval lawn. Brownie not seen.

At 9 Greenie came to me at the glade and sang a very good song.

good undersong for about 10 minutes, interrupted only when reaching for worms in my hand. Even then the song would continue right up to the time of opening his bill to take the worm and be resumed as soon as the worm was swallowed. It was full of typical thrasher phrases, but no imitations. His crooked tail feather is now perfectly straight and nearly full length, but there are short outside and underneath feathers only about $2\frac{1}{2}$ inches long at each side of the tail. His coat is very good, but there are 5 or 6 very small new pin-feathers showing at the wrist(?), (lesser wing coverts(?)) At the present time, ~~except for temporary accidental~~ ~~disarrangement of plumage~~ there is only one permanent external feature by which Brownie and Greenie can be distinguished from each other with absolute certainty in the field, and that is eye color. The usual carriage of the wings is different, but this is sometimes departed from for a few minutes at a time.

External
sex differences.

G's undersong. 11:35. Greenie has been sub-singing almost constantly, ^{Since} nine, and has been most friendly, coming out of the bushes to stand in front of me 2 to 6 feet away and go through his exercises. He has the hen imitation and his "broke-er-rear" is much like part of the russet backed thrush song. The r-e-a-r part has the thrush quality and pitch, sounding far away.

B's unusual
silence.

Brownie came into the glade while I was watering there about 11:20 without making a sound of any kind. I stopped watering, sat in the chair and Brownie jumped up and sat on my ankle, as solemn as an owl, while I handed her worms until she got impatient and dug them out herself. The unusual feature here was that all this time and for several minutes after she uttered no sound of any kind. A few minutes afterward I heard her undersong from the "dormitory tree" (about 40 feet N.W. of the old oak) and Greenie's from the glade. I went to watch Brownie, finding her dozing and occasionally remarking: "To wheat, to wheat, ka-da-a-h",

B dozes.

and turning heard to look in the direction of Greenie, who, by this time was scripping loudly up in the old oak. A bird landed just behind my shoulder on top of a lath shelter against which I was leaning and ran across it with pattering feet--Greenie. He dropped to the ground peered up through the branches at his mate and picked up a twig, I looked at her also and saw that she was carefully placing a loose twig as if building a nest about ten feet above the ground and about 6 feet south of her roosting place. (She had not been sitting in her roosting place). Greenie dropped his twig and climbed up to her, perching directly over her. They then discussed matters and I came in to write this note. (Shade temperature 76 degrees F.) What it is all about, I do not know.

1:45. I did not go out again until about 1:35. I went directly to the dormitory. Brownie was sitting motionless on her night perch; Greenie ditto at the place where Brownie had been arranging the twig. ???????

At 2 both birds had left. On going to the glade, Brownie soon came in from the west and Greenie a little later from the opposite side. The rest of the afternoon they took it easy most of the time.

At 6:15 Brownie was on her same twig in the dormitory, but I could not find her mate.

Sept. 16. The thrashers sang beautifully up to about 8 A.M. I went to the glade just as they were finishing. Whistling and calling evoked no response and I had about decided that they had gone to the Reynolds territory when I saw them both sitting near the top of the sparrow-hawk pine about 100 feet from my chair in the glade. (A few bluebirds were heard and seen flying overhead).

I called and whistled and they began to get restless, turning their heads from side to side, then first one and the other sailed

down directly towards me practically in straight lines, with only one slight swerve to avoid a branch in the old oak. They moved their wings only in starting and in stopping. Brownie landed in a baccharis bush about 8 feet in front of me, dropped to the ground and came to me at once. Greenie's landing was on the ground about 6 feet from me. Both began talking in little reedy whines and gurgling sounds. (At this moment a fox sparrow came out of the bushes and ate from the dish 6 feet in front of me--the first of the season)

Talk

First Fox Sparrow.

Nesting instinct again to fore.

When the thrasher had enough worms, they went out of the glade toward the dormitory tree. After a minute or two, I went there. Brownie was pecking at twigs just above her roosting place and making new soft sounds. The nesting instinct seems strong in these birds, cropping out constantly. Greenie, I did not locate. This roosting place will be untenable in strong northerly winds, or even moderate ones as the tree is on top of the ridge. While Brownie was there the wind was strong enough to ruffle her feathers.

At 8:45 she was not there, but as I went along the road between the berry patch and the glade looking up into the trees, a soft call was heard and Brownie was looking at me from under a bush about 6 feet away on top of the bank. Greenie was down in the glade digging. Brownie's talk as she accepted my offer of a worm was again different from any I recall.

(Autumn birds)

(This is not intended as a record of all birds seen, but as in preceding notes, some observations will be recorded. It is now one week to the Autumnal Equinox. Birds are changing about. Yesterday a warbler of some kind, a vireo--unidentified and a woodpecker observed for about ten minutes, which answers the description of the Nuttall. It was in the old oak in the glade working on and under the horizontal limbs, at times not more than about 9 feet from me. I saw every portion of its exterior. The brown towhees tried to drive it away without success. A Nuttall sparrow followed it from limb to limb for a time and seemed only curious. (I wonder if it was trying to find out why the other radically different bird is also called Nuttall?))

5:30 Both thrashers have appeared every time today that I have looked for them. They are keeping pretty well together.

Worm exchange
worm and
pecks.

A few minutes ago Greenie took a worm out of Brownie's ^{bill.} They stood facing each other, then Brownie leaned forward and took it back again. Greenie protested wordlessly and Brownie pecked at him once. He then returned the peck and both went off together quietly.

6:30. At 6 I went to see if Brownie was in the dormitory, not expecting that she would be there because of an uncomfortable ^{from} wind from the north. As anticipated she was not, but in a few minutes both birds were seen going toward the glade, one of them calling loudly from high up in the old oak. They both faded away so I was unable to find them. Somewhere in the glade is the logical place.

Sept. 17th.

Birds come from
200 yards away.

9:00 A.M. At 8:15 I went to the glade--no thrashers to be seen. Calling brought no response. After I had turned back to the house I heard a distant scrip off to the south east, so turned back to a point where I could command a wide view. A bird was seen to volplane from the top of a dodar, about 200 yards off, coming in my direction. This tree is in the Robinson place. The flight was across the width of the street. The next 150 yards or so were in the open. The bird ran all that distance and when it reached the glade, whence I had gone, announced its arrival with a low call, came to me for worms. It was Greenie with lawn clippings adhering to the top of his bill. Short snatches of full song were now heard off in the direction from which Greenie had just come and he immediately ran up into the small oak at my back and sent back full-voiced ^{various} answers. He also sang ~~var~~ phrases of full-song that did not appear to be in the nature of communications. During this time he was about 12 feet from me. The other song remained stationary for some time, ceased, ^{then} and Brownie walked into the glade and jumped up onto my hand talking confidentially. Greenie came down and I gave worms to both, using both hands. Both then went up into the old oak and both sang snatches of full song. One then went off in the direction

Greenie
first.

Full song
by G at
close
quarters.

b Answers.

of the dormitory tree, the other remained perched high up on a dead branch talking and breaking into full song at times. This, I think was Greenie, but can not be absolutely certain. Which ever it was seemed to keep posted as to the other's whereabouts. Finally

Both explore unfrequented places.

they got together on the road and began exploring about the tool house and shop--places seldom visited by either of them--except when expecting to find me there with food. Brownie, after I had succeeded in getting their identities straightened out by having her come to me for a worm, tried to pull up a soap-root that was projecting from a hard path. Failing in this, she hooked her bill under the wooden cover over a tile(sunk in the ground for the purpose of getting water down to the roots of an oak) and peered down into the hole (4 inches diameter by three feet deep) curiously. Both then jointly explored this relatively unfamiliar territory. I had not enticed them into it; the reverse was the case. By this time it was 8:48 plus or minus, and I left them still absorbed in their own affairs. Much of the foregoing is new behavior and, it will be noted, represents more or less a cooperative action. It is pleasing to see their sustained interest in each other, and this characteristic of theirs naturally suggests that these birds may mate for life. At any rate, they have been together for a known and 4 nests period of 51 weeks, to date; how much longer I do not know. A very entertaining pair--always doing something new.

B raises cover plate.

Interest in each other continues.

51 weeks known companion-ship.

New tones in full song when near.

Variability of song.

10:20. I neglected to record that, at 12 feet distance, [†] new undertones and interpolations between louder phrases were heard in the full song that I have not heard before even at 25 feet. This does not necessarily imply that this a fixed characteristic of all thrasher music, for as frequently noted, the song seems never some twice the same, though always containing phrases previously heard. Thus, when the bird was singing from the top of the old oak about 30 feet above me, it introduced many of its short songs with flicker

phrases. Between phrases it frequently kept its bill open without uttering any sound, as has been previously noted.

The wind has switched to the south; temperature 60; cloudy, with intermittent sun. So far the weather seems to have little influence on song. I believe these notes record that I have heard these birds sing in the rain. If not recorded it should have been. They also sing in the fog.

Other birds.

(The juncos are back at the quail feeding station outside the window-- their first appearance for some time. Formerly a pair resided here permanently until one died during the nesting season. Steller and California jays are gathering acorns and eating at this same station. The former is the one with two light blue forehead lines. Green-backed goldfinches are still feeding young. Black-headed grosbeaks were still here yesterday. Nuttall and (or) Gambel sparrows are getting more plentiful. The young spotted towhees from the last nest have been showing an increasing amount of red about on their flanks. One of the two survivors is getting a black line on the crown, presaging an entirely black head I suppose. The other's head is still all gray.)

I give B a young lizard.

11:20. Brownie was singing about three-quarter song in the

glade. I happened to find a young lizard about an inch and a half long. It had lost most of its tail, but was very lively. I carried it to the glade (11:05) and offered it to Brownie, keeping it concealed in my closed hand to give her a surprise. Julio was watching (

Try to surprise her.

attracted by Brownie's fine imitations of the russet-backed thrush and the horn and the pendin (lizard experiment). Brownie came forward promptly and stood by my hand still singing. I opened it (I had a meal worm in it with the lizard) and she did not even wink when the lizard popped out, but seized it expertly and began battering it on the ground. Greenie came out and stood about 4 feet away

Not surprised

watching. Brownie played with the lizard--or so it seemed--by letting it go and catching it again, and as Greenie came a little

She teases G with lizard.

nearer she ran to him and flicked ^{it} by his bill opened to receive it and then ran on by without giving it to him. In a few moments

G grabs it.

she did this again, but Greenie was prepared and took it from her.

She then flew in his face and pecked at him, but he ran off with it

G eats it. 5 or 6 feet, hammered it some more and gulped it down without interference from Brownie who was ^{now} more interested in meal-worms.

anthropomorphic

Those are the bare facts. In my anthropomorphic naivete, analysis of B's behavior, naturally I see in this, on the part of Brownie, a teasing spirit of play, and some pique—^A and a mild disappointment at inability to work the trick successfully the second time. In my present state of ingenuous simplicity I am not much concerned as to what preordained pattern this particular episode fits into, or what precise local vortex of sub-atomic energy in the primitive nebula (from which ^{our} solar system evolved) was ear-marked, tagged and kept intact through the ages to become at this day, hour and minute, the manifestation of rhythm just witnessed.

Strong wind does 6:15 P.M. A rather strong southerly wind blowing into the glade not stop singing. most of the day. The thrashers spent most of the time there notwithstanding, on or near the ground, singing sub-song over a long period

imitations of time in the aggregate. Fine imitations of meadow lark and thrush all day. about 5. The sky was threatening rain, Air temperature at mid-day continue

Shelter not sought. about 66. It will be noted that the thrashers chose to occupying the glade despite an annoying wind and sang under-song as usual. At time of this note there was no wind.

Sept. 18th.

Early full song. Thrasher full-song was heard from the direction of the glade shortly before 6 A.M. It continued intermittently until about 7, at which time there was a longer interval and the song was repeated

Thrashers in Reynolds Territory at increasing distances toward the south east. At about 7:45 I went over to Dr. Reynolds'. A thrasher was scripping about 50 feet south of his house and another about 150 feet northwest of it in a pine. Nothing more was heard until just as I passed in front of the Robinson's a thrasher was heard calling in the garden. I called and two thrashers appeared in the bushes and one of them ate pyracantha berries--the first time I have seen them eat fruit of any

They eat berries-- first time seen.

kind.

B&G positively
identified away

) from home.

A gardener approached them from the rear, apparently not seeing them and they flew by me across the street (Estates Drive) due west and alighted in a small cypress tree on Selborne Drive. This is the same tree from which I have previously called one or other of "my" thrashers a number of times. I approached the tree, but they were shy and dropped down to the street on the other side and started running for my place. I herded them in this direction, although they did not need urging, and got to the glade first by a more direct route, so saw them enter. They were Brownie and Greenie with lawn clippings sticking to their bills--perfectly friendly, talkative and eager for home food.

I drive them
home.

Their range
about 300 yards
to S.E.

Dr. Reynolds, who is keenly interested in birds and who was at his unfinished house before 7 A.M. yesterday hoping to hear the early morning song of thrashers, said this morning, that two thrashers were there about that time, calling but not singing. I had forgotten the time at which I had heard Brownie and Greenie singing yesterday morning and erroneously^{ly} assumed that the birds he heard were not they. However, checking with yesterday's notes shows that the birds were seen returning from Reynold's territory about an hour later. In any case, now that the birds have been followed from that territory all the way back further speculation is not necessary.

L2:30 P.M. No further observations were made until about 12 noon, at which time I returned from an absence of a couple of hours. There were no thrashers in the glade, but I could hear under-song at ^a an uncertain distance directly west towards the oval lawn. I found Brownie there digging and singing at the base of the wall supporting the western rim of the fill upon which the lawn is placed. This is approximately 200 feet from the chairs in the glade. Greenie was not there (with Brownie) and he may

have been the singer--also Brownie may have moved--so there is no evidence that the under-song was heard at the distance mentioned. Brownie had a very good prospect hole and did not care to leave it, although she finally wandered up to me casually, jumped to my hand and sang the last of her under-song about 18 inches from my face. Thereafter her talk was mostly based on the pee-yoori ^{hee-ee-ee} theme. Greenie shortly came also and sang sub-song almost continuously. He imitated the russet-backed thrush very convincingly, also the meadowlark, but not to the same degree of perfection. ^{as the Thrush song}

(Slender-bill- 1:30. This is the first Slender-billed Nuthatch noted this season. and Nuthatch ar- An earlier memorandum records the arrival of the first one (first ives) seen or heard) in 1931 as "near the end of September". This bird takes suet from a feeding station, places it in holes in the trunk of a palm tree 8 or 10 feet away, then searches for loose fragments of bark and rams it into the hole on top of the suet).

Undersong heard 1:35. Thrasher undersong 70 feet from this chair and about 70 feet. 10 feet lower plainly heard with window open. With window closed not sure, but plenty other sounds. (Aeroplane, carpenters 300 yards away, automobiles, distant traffic, California Jay, motor trucks---all however very faint and have to be listened for--except aeroplane which nearly drowns everything).

Full song in 5 P.M. While sitting here writing, Julio watering outside the afternoon. window noisily, I heard thrasher full song in the direction of the glade 60 yards away. Many trees and a part of the house in between. I went out to verify this. It was Brownie in the top of the old oak, faced south east. (Verified by getting her to come down to me). She also called with rich, full notes. Greenie was not around.

Roosting place. 6:20. A thrasher went up into Brownie's perch in the dormitory.

8:15 The bird is still there motionless.
(Night-crow) Night hawks are calling. I have seen and heard them here at 10 P.M.

Sept. 19.

Thrasher full song was heard in the direction of the glade at 5:45 A.M. It may have begun earlier. It kept up intermittently until about 8. At 8:15 both birds were on the oval lawn, and

when I went out there a little later, were not seen or heard. I did not see or hear them in Reynolds territory and they had not been heard there up to about 10.

10:45. I have not seen signs of either bird since 8:45.

11:40 While sitting here writing, undersong was heard nearby. I stepped out of the window on to the terrace and Greenie was eating suet at the upper station in the court. Brownie came quickly out from under the rhododendrons and jumped to my hand with little squeaks and gurgles. The tip of her bill carried lumps of black mud on it, otherwise she was immaculate. Her plumage is perfect as far as can be seen. She was very hungry.

Bill is opened and closed in undersong. 12:10 I have just been watching Greenie singing his undersong in the glade. He does open his bill in undersong. I had a close view of him in profile against the sky and his bill is constantly opened and closed as evidenced by the streak of light seen between the upper and lower mandibles. I have wondered heretofore how these birds could articulate their phrases in undersong and produce such melodious sounds with giving the effect of ^{-out} ^{their} being "wire-drawn".

Both sing at the same time. 2:45. I went to the glade at 2:00 to look up the thrashers.

Brownie and Greenie were there about 20 feet apart and both began their undersongs almost at once, though they may have been singing before. They kept it up almost uninterruptedly for about three quarters of an hour. At one time Greenie imitated the thrush simultaneously with Brownie's imitation of the hen.

B. objects to quail too near. Brownie sat on one of her favorite branches about a foot above the ground and a quail walked out quietly until it was almost underneath her. I said: "Chase the quail out, Brownie" and by coincidence, she decided to do so almost at that instant, making a thorough job of it. If one speaks to these birds often enough, making some sort of suggestion to them, it is rather surprising how often a pat response follows.

Brownie now sits in my hand longer and more patiently while waiting for worms, -if not very hungry. On such occasions she will often look for hawks, stretch her neck horizontally and look at some distant object or examine some portion of my topography. This time B. inspects my finger-nails. she probed gently with her bill underneath the finger-nails of the hand

on which she was sitting so gently that I could scarcely feel it.
 Lighter after There is no doubt of these birds' being lighter and grayer
 moulting. than before the moult--at least in my mind.

Going to bed. At 5:45 I looked up the thrashers to see if I could find Greenie's
 sleeping place. The road runs between the old oak and the berry patch
 and is cut into the slope so that there is a bank about 5 feet high on
 the north side. (Berry-patch side). Along this bank there is a screen
 of small, low-branched live oaks, broom, acacia and pine. The tallest
 about 15 feet high. One of these oaks is the "dormitory tree". Some
 of the others are suspect. I stood facing this bank about 6 feet
 from it. Brownie and Greenie came out from under the low-growing
 broom, sat on the edge of the bank and watched me for about five
 minutes, directly in front of me, very calmly. They wanted no worms.
 Gradually they faded back under the broom, so I went around to the
 other (berry-patch) side. I could not locate Greenie and think he
 was up in one of the thick masses of foliage before I got there.

Slumber song. However, Brownie was still under the broom. I could see her tail work-
 ing up and down, so knew she must be singing. The distance was approx-
 imately 12 feet. I listened intently and soon I could hear her song
 above the sound of the gentle breeze (at my back) through the pines. This
 was what I have called the quarter-song, stating also that it might be
 called the slumber song appropriately. The last designation seemed to
 be particularly fitting on the present occasion, for at exactly
 6:01, Brownie stopped singing, gathered a mouthful of pine needles
 and fibres, carried them up to her usual roost and messed about with
 them until they had all fallen to the ground. She then retired for
 the night. The use of the pine-needles, I think, showed that the act
 was not a conscious nesting effort, but merely an expression of the
 nesting instinct which required no discriminating selection of materi-
 als to satisfy it; because in all four nests built this year not one
 pine needle was used, although they gather in drifts all over the place
 if not removed. While the nests were building I saw innumerable in-
 stances where chosen material was selected from amongst pine-needles.

Greenie had eluded me once more, although I doubt if it was intended, since Brownie is quite open about the matter. Still the two birds have distinct personalities.

Sept. 20th.

9.00 A.M. About 8:30 I went out to look up the trashers.

Calling brought no response, but as I left the glade, Brownie was seen coming rapidly towards me and Greenie further to the north was in the act of rolling a large stone out from under a loquat tree. After satisfying Brownie's appetite (Greenie wanted nothing), she climbed the old oak and called loudly, then volplaned to the ground by the dormi-

B arranges tory tree. I went there to see if she was so fatigued as to need **twigs in** repose at this time of day, and found her in her night perch arranging **dorm. tree.** twigs which she must have carried up! To complicate matters further

G helps. Greenie joined the party, gathered nesting material, carried it up into the tree and joined Brownie. While they did not seem disturbed by my presence, I left to avoid any possibility of interference.

Looks serious, This seemed like a bona fide nest building effort in every **but think not** respect, yet I cannot think that it is. If it should be, it punches **genuine.** my yesterday's deductions full of holes.

Amateur analysis It will be noted that the apparent stimulus here was satisfaction **of act.** of the birds' immediate requirements for food, leaving them with out pressing needs, in other words--idle. During the normal nest-building season, as the notes very definitely record, giving food to the birds at times when they were not actually engaged on the nest work, usually (perhaps the notes will show invariably) set them to work again, even when the point at which they were given food was far from the nest under construction.

At 9:50 Brownie was in the dormitory tree about 6 feet from her night perch, moving slowly about in the branches. When I arrived

B continues she moved over to a point directly over the perch and began breaking **act.** off dead twigs and dropping them (perhaps three or four). Most of them

fell to the ground, but at least one lodged in a crotch. (The live oak, which has very dense foliage, has its inner twigs beneath the canopy, "shade killed". In the course of time these drop off, but they may persist for years. They become very brittle and at a certain stage may be easily broken. The smaller ones form a large proportion of the main structure of the thrasher nests at this place. They are either broken off or picked up from the ground. Being, as a rule, crooked, with numerous small forks, they make a strong structure even when in a rather loose mass, as in the thrasher nest)

B calls loudly as I leave. I left in about 5 minutes. When I was about 20 feet away from the tree Brownie called twice in rich tones and in full voice. (I do not deduce anything from this!) It was like the opening phrases of the song of the Black-headed Grosbeak, but deeper. I would not call it an imitation.

10:45. At 10:00 I went to the glade. Both birds came at once, both using the same phrases which I cannot approximate closer than to say they were little, thin, high-pitched, drawn-out squeaks ending with gurgles. (Again illustrating the tendency for both birds to switch to the same phrases simultaneously) I gave them both worms--little competition between them, other than not very strenuous efforts to get the worm first. Greenie at one time could be plainly seen trying to focus both eyes on a worm in the tip of his own beak. It appears that he can do this. At such a time it is quite evident that the eye-balls are not spherical. They both climbed up the old oak and three-quarter song came from it. Then several loud calls: yer-r-rk--yer-r-rk, be'-voor. By ~~last~~ latest precedent, they should go next to the "dorm" (dormitory tree). I waited for a quiet interval and then went there. Sure enough, Brownie six feet from her night perch arranging loose twigs aimlessly about 9 feet^{*} above the ground and 10 feet from my head. She then "rested" and answered when I talked to her. Then over to her night twig with more moving about of loose

Tendency to use same phrases by B&G. G looks cross-eyed at worm. Eye-balls not spherical. Calls.

B again "nesting"

* Later measured - 10 ft.

twigs found there, then a little slumber-song, then rest. Greenie, just before Brownie's second rest period, had walked by my feet, climbed the tree, fooled with twigs near Brownie, saying be'-voor repeatedly and accomplishing nothing constructive. When Brownie had ensconced herself in her night location Greenie went over to her; they talked a little and Greenie, as I was leaving, settled himself beside her facing away from her with his tail touching her.

Except for resting so close together this episode was almost the exact duplicate of the preceding one.

6:00. During the afternoon I gave them worms two different times without their going to the dormitory tree. About 5:30 I gave them worms again. They finished up with soft food from their regular supply and faded away after Brownie had collected some soap-root (which she dropped). At 5:40 Brownie climbed up to her roost and when she was well settled I went in search of Greenie. I found him at last in a small oak about 30 or 40 feet east of Brownie where I have looked for him every time I have tried to locate his roosting place. Whether this is his regular place remains to be seen. The sun is just setting beyond the Marin hills (down at 6:10--official time 6:12) in a cloudless sky, so there is plenty of time for him to move about if he wishes to change.

6:23. Which is exactly what he did, for at 6:15 he was not there, but rustling about in Brownie's tree and she was gone. In a minute or two she came back on the ground, wiped her bill, and went back to her regular perch. Greenie, meanwhile, had moved to a pine tree the branches of which almost touch those of the oak. Consequently I still do not know where he roosts. It would look as if Brownie had gone for a last snack to fortify herself for the night, or perhaps the soft food had made her thirsty, as I have noticed it sometimes does.

Sept. 21st.

Sept. 21st.

At 8:30 I went to the glade, Brownie and Greenie came out of the bushes promptly, Brownie using for the next few minutes a low-pitched, plaintive moaning sound (which was new to me) in her talk. Greenie's comments were different, but he adopted this same expression after a few minutes. To keep Brownie from getting more than her share of the worms, I offered them in both hands. While they do not quarrel about them, Greenie still gives way to his mate without contesting the matter. As Brownie is unable to eat two worms at the same time while they are separated by a space of several feet, this system works. When Brownie has enough (temporarily) Greenie is not over-awed and takes worms freely.

Gather soap-root. Both birds began gathering soap-root fibre again, arguing wordlessly about one particularly attractive ribbon of it, which Greenie had discovered and would not give up. Finally they forgot what they were going to do with them and abandoned them at my feet. It was now time to go to the dormitory tree and see the working out of the rest of the pattern.

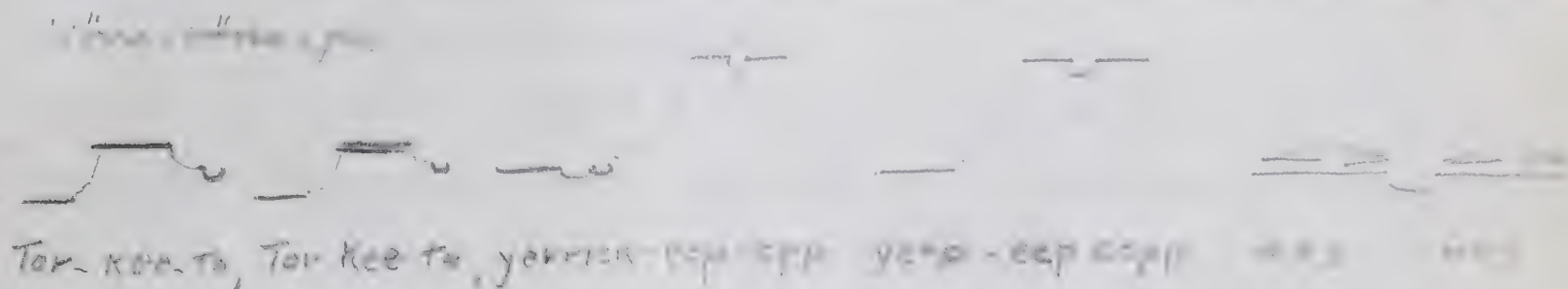
B arranges twigs in new place. At 8:45 I stood at the tree. Brownie was arranging twigs 6 feet south of her night perch and really working systematically at a nest building operation at that point. (The same one as described in the 10:45 entry of yesterday). She got the twigs out of the tree itself. Call this location B and the night perch A. She then moved over to A and got a few twigs for that place. (Is it possible that these birds build platforms for resting places? I have not seen any). She prospected about the tree for more twigs, then sat within a few inches of A and began to sing very softly. It was now 9 o'clock. She was ^{10'} 9 feet above the ground and about 9 feet from my eyes. She had been working 15 minutes. She then burst **B's full-song** into full song facing me. This is impossible to describe. It began with a few soft phrases somewhat like wör-ra, wör-ra--yer'. (O as in

analysis of
song.

worry, the German ö; e the same). This was followed by a loud torkeeta, torkeeta, yerrick, een-eeep, verp-eeep-eeep, w-a-v----w-a-v.

The yerrick and verp were pitched, I should say (I am no musician) at about F above middle C; the eeep at C above; the ter at middle C; the ta somewhere between middle C and F above (I could not find it on the piano; and the long drawn-out way also somewhere in that vicinity. The way begins with a crescendo and ends with a decrescendo.

Mr. E.M. Nicholson refers briefly to Mr. Rowan's method of representing bird-song. I have not read Rowan's work, but based on Nicholson's brief outline, I would tentatively attempt to represent the song thus:



There was much more than this, but this is all I can even crudely approximate. This, with other song, was kept up at intervals for 21 minutes.

During this time Greenie was near the tool-house occasionally scrip-

Ventriloquism

I turned my head to see what was after the quail and when I looked again Brownie was gone. I went to the oval lawn and, as I sat down, I thought I heard thrasher full-song off to the south-east and was about to leave to investigate it, in order to get a definite record on the distance at which it can be heard; when I saw Brownie 25 feet away in the shade of the bushes, sitting on a stone. She was the singer. She gradually worked over towards me digging and singing under-song, which expanded into three-quarter song. This was an especially good example, and in it were incorporated the following imitations in which no imagination was required to identify the

Imitations,

originals: Meadowlark, russet-backed thrush, quail, flicker, jay, hen, ground-squirrel, robin, whistling for the dog interspersed with

the kissing sound) and also the ting -tong of the bell song.

lasted for

This, 20 minutes, more or less. Included also were phrases of ~~the~~ her own song previously noted--in fact by far the larger portion --and a new one:

Walk up ting-ting

A phrase like this lasts about 1 second, or perhaps a little longer.

Daylight
lozing.

Nesting
complex.

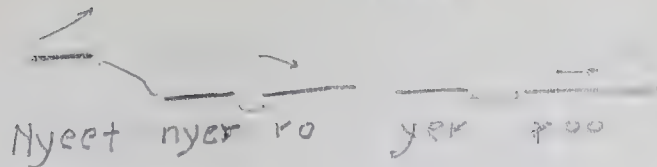
At 11:35 I went directly to the dormitory tree. Brownie was dozing contentedly on her very elementary "nest" at B. When I spoke to her she responded with a few soft gurgles and twitters. As I stood there quietly, she seemed suddenly to realize that she had been caught loafing on the job and began to shake the twigs within reach of her bill, but soon stopped as I moved off, so as not to interfere with whatever it is she has in mind--if anything.

I am wondering, since I discovered this retreat, if this is not where the thrashers have been some of the times when I could not find them and ^{also} when they have so suddenly faded from the picture.

Ventriloquism. 12:30. At 12:15 I went to the glade, hearing undersong coming from that direction. Both birds were up in the old oak. A passing truck with missing motor silenced them. In a few minutes I heard what seemed to be three-quarter song coming from the dormitory tree, and had left the glade on my way to investigate when I realized that it was in the old oak beside me. I stopped and soon saw Brownie on a horizontal limb, not 15 feet from where I had been sitting, eating a yellow-jacket. When she had swallowed it the song was resumed. I had been completely deceived, notwithstanding that I am perfectly familiar with the ventriloqual (or quill?) characteristics of the undersong and had already been fooled once before this ^{same} morning.

I went back to the glade; Brownie dropped down beside me (It is surprising how softly they can come down considering their small wing area), one bird ate from one hand the other from the other hand. Brownie sat on my knee (where I would hold a book) and repeated the phrase quoted below:

New Phrase



I watched her bill closely and found that she used it in modulating the sound by opening and closing it, though the opening was very slight-- a mere crack .

The arrows in the diagram above are supposed to indicate the inflection of the voice: pointing up--rising inflection; down--falling; level --monotone.

At 2 P.M. Both birds were in the dormitory tree, one of them being on the "nest" B, but it hopped to a higher branch before I could identify it.

At 4 on going to the dormitory I saw Brownie on the ground under it, looking up into it. On seeing me she ran to me, then looked into the pine tree, the lath house and other trees and departed. Going to the glade I heard undersong. The bird that came out for worms was Greenie, singing as he came.

At 5:45 I went to the glade--both thrashers there, coming out to stand in front of me and not much concerned about worms. When

(Fox Sparrow) the newly arrived fox sparrow came out and joined the group as if he belonged there, I tossed him a worm, which he took, and neither Greenie's thrasher even started for it. At about six the thrashers melted into the surroundings. Brownie was not in room A until 6:15. Greenie
Roosting
Place
Found(?)
I staked from tree to tree losing him repeatedly. I finally located him in the tree suspected to be his roosting place as stated Sept. 12 (See p. 384). I doubt if he stays there. (J. L. Tonight)

7:45. I could not find him there with a flash-light. I found Brownie in her place, but could not see Greenie in the same tree. He might, however, be in either, as it is not easy to find them at night. About 18 inches from A is another accumulation of droppings and I have thought that that might indicate Greenie's usual place.

My principal concern in this connection is to determine whether they roost near each other or far apart.

Sept. 22nd.

Thrashers
missing(?)

At 7:30 A.M. the thrashers could not be found on the place.

Found at
home.

About 8:30 I went over to Reynolds' Territory. Nobody had seen the thrashers. On my return about 9 o'clock, I heard them some distance off at my own place, so entered the glade and called. In perhaps 5 minutes (a slow response) both came in, Brownie full of explanations as she sat patiently on my knee. The only evidence of moulting that can be seen--and it is the same with both birds--is in the short outside tail-feathers and small, new feathers at the "bend of the wing", the wrist, I believe. There are about two of these on each wing and it looks as if they were those that make up the false wing(?) at the point where the rudimentary digit is located.

Moult.

Nesting complex. True to most recent form, after both birds were satisfied, Brownie was found making for Room A. She sat there resting, and in a few minutes, Greenie approached along the ground carrying a forked twig which he carried up to Room A. As I left, both birds were messing about at that point. Before Greenie's arrival, Brownie was on the point of full-song--the symptoms are clear--when she became nervous about Julio and a long ladder that he was bringing out of the tool house. (9:35) While she was on my knee I noticed that same kind of small, flat fly on top of Brownie's head that is so often seen on and crawling under the thrashers' feathers. She made a slight attempt to get rid of it by shaking her head sidewise, but the fly was practically at the point of least movement (center of oscillation) and was not disturbed.

Parasitic
fly.

At 9:50 I renewed the supply of soft-food in the glade. The thrashers were there. A fly was still on the top of Brownie's head crawling in and out of her feathers. No attempt was made to dislodge

it. The fly appeared to be about 1/8 inch long (3 mm.). This is a small one. I could not see that its wings were mottled. (Ref. Dr. Linsdale).

On this occasion the thrasher talk was different from that heard at 9--9:30.

Ant carrying. At about 12 O'clock, as Brownie sat on my knee, an Argentine ant crawled down from underneath her feathers, walked down her leg on to my clothes. This illustrates one method by which these insects may be disseminated. The bird did not seem aware of its presence.

Xylophone Effect.

She introduced a new feature into her undersong--a miniature xylophone effect. This is a modification of the "bell song" produced by uttering with great rapidity a single note pitched the same as the first "teen" or "ting" of the bell song and of the same timbre. It is uttered so rapidly as to give the effect of a sustained vibrating sound as in the xylophone. I have heard something approaching this somewhat before where ^{the first note of} the bell song, noted at the time was not single.

In the present case, the regular teen-tong follows the sustained succession of short notes.

ANNIVERSARY
OF
341

This is the anniversary of Brownie and Greenie's first being seen together at the feeding station provided for them to keep them from digging up the oval lawn.

4 to 4:30 Greenie was alone in the glade unembarrassed by the presence of Brownie. He sang about half-song practically all of this time, at times approaching three-quarter. There were few imitations. These are mostly in the three-quarter song. He did, however imitate the hen and the thrush.

I was away until about 5:45.

Night Roost. At 6:00 nobody was in either Brownie's or Greenie's tree, and no thrashers were in sight.

About 6:05 a thrasher was seen to climb up into the sparrow-hawk pine.

I went to the glade and called--no results. I thought I saw something go up into Greenie's tree.

At 6:10 I went towards the dormitory (Brownie's tree). A flock of quail flew up into it noisily, then there was a great disturbance in it and alarm calls of quail. I thought: "Brownie is home and is chasing them out". And so it proved. Brownie had herself well settled in her accustomed perch at 6:15. Sunset at 6:09, air temperature at 6:20, 62 degrees F. Clear--dead calm.

Sept. 23rd.

At 5:30 A.M. as I awakened I heard loud thrasher calls toward the glade interspersed with short snatches of song. This lasted for a few minutes and there was silence.

At 7:30 the birds were not at the glade. I did not look for them again until about 8, but saw that they had been working at the oval lawn in the meantime.

Brownie came to me in the road near the old oak and got worms. Greenie could be heard approaching. Brownie went to the dormitory. I followed and found Greenie already there trying to break off dead twigs and later coming down for loose ones on the ground, dropping them in favor of the worms offered. In the meantime Brownie had gone to room A and was working on dead twigs over her head. They were both busy as I left, but making no showing.

Greenie picked as the male by D.B. About 2 P.M. Brownie and Greenie came into the glade in the presence of Donald Brock.--first Brownie and then Greenie. As soon as my visitor saw Greenie he at once--without my having raised the point--picked him very positively as the male bird. He and his father have caught (and released) many thrashers.

"the" fly still with Brownie. When Brownie came forward for a worm "the" fly was sitting on top of her head, later crawling underneath her neck feathers.

3 Thrashers present. About 2:30 one thrasher was singing undersong in the glade and there were two others in the berry patch. I did not identify any of

B ejects
quail from
her tree.

B&G both
work in
Room A.

Unusual
behavior at
bed-time.

At 5:30 I gave Brownie and Greenie all the worms they wanted in the glade. Brownie sat on my knee for several minutes and was even more friendly than usual. Greenie retired to his tree and sat there for perhaps 15 minutes. He then climbed into the sparrow-hawk pine and was joined by Brownie. It looked as if they were going to roost there for the night. In perhaps ten minutes Brownie came down and investigated the interior of the lath house. She then went up to Room A, but after a few minutes sailed out to the berry patch. In a few minutes more she was back again near me at the lath house. She then climbed up a short ladder and, from there, went up into the pine tree west of the one where Greenie was presumably still sitting (I did not see him again) and sat for several minutes in what looked like a good roosting place about 10 feet above the ground. However, this did not satisfy her and she sailed out of there toward the glade, reappearing in a few minutes on the ground in front of me as I stood in the door of the lath-house. After looking at me, she considered going up again into the pine, but instead, worked her way over to the dormitory tree and by 6:20 was comfortably installed in Room A after all of these wanderings. I have not noticed this sort of procedure before. Heretofore she has not appeared to mind my presence when retiring for the night and I doubt if she did this time.

Sept. 24th.

Morning song.

The thrashers were first heard singing at 5:40 A.M. Singing continued at intervals until about 8 o'clock.

As I stood under the old oak about 7 Brownie, in the top, answered my calls to her by making sounds, as described by Julio, who was standing near, as "Like a cat". Greenie, on the ground nearby, picked up the phrase with slight alterations, again illustrating the tendency to use the same phrase at the same time.

Other than to note that one thrasher was singing at 10:30, I gave

Cat-like
911

no heed to their doings until:

1:30 P.M. At this time I went to the glade. Whether or not it was a coincidence I do not know; but as I approached, both birds were seen hurrying toward it and as soon as I entered, popped out of the brush and came to me, Brownie jumping up on to my knee, repeating one phrase over and over. (I did not see the fly). Both birds were very hungry. Brownie jumped down very suddenly and ran rapidly toward the dormitory. After attending to Greenie, I followed. She was just placing a large twig in Room A. There is actually an accumulation there large enough to show that it is not an accident. After working a minute or two, she left, still in a hurry, and I came in to make this record.

A "nest" actually is visible in Room A.

Afraid of visitors.

5:20. The birds showed again their timidity before visitors. With two visitors in the glade one came out reluctantly and would not repeat. When the guests went toward the house, I carried soft-food to the glade and both birds came to me without hesitation.

Night Roosts are separated. In different trees.

At 5:45	Brownie	climbed to Room A,	Greenie	dug in the berry-patch.
5:50	"	joined Greenie		" " " "
5:51	"	still in berry-patch,	Greenie	climbed his tree.
5:54	"	" " " "	"	joins Brownie.
6:00	"	retires to Room A	,	" still digs.
6:05	"	remains in	" "	" "
6:10	"	" " " "	"	goes up his tree.

I then went to see if Greenie was still in his tree. I could not see him and had about decided that he was not there, when a smaller bird flew into the tree and Greenie revealed his presence by driving it out. Thus it seems that I might easily have overlooked him on other occasions while he was actually in the tree. So far it appears that these birds do not roost together.

Raining.

At 7:20 it is raining; barring the one or two hundredths of an inch since July 1st., it looks like the first rain of the season. It has been threatening all afternoon. Temp. at 6:20 P.M. 58 deg.

Sept. 25th.

11:50 A.M. About 7 this morning I heard a few thrasher calls. At 7:45 neither bird was seen in the glade or elsewhere. It had rained during the night and was still cloudy. I thought that possibly the rain, having moistened the surface soil, might have tempted the birds to range over a wider territory. Over at Dr. Reynolds' the birds had not been seen by him for three days.

Full song.

At 11:20 a thrasher began calling quee' lick at 11:20 from the old oak. It was answered by bursts of full song from the dormitory tree--both locations being verified by going to them. Both birds, although looking very dry were engaged in strenuous preening operations and were not interested in me for a long time. Greenie came first. Then Brownie perched on the tree overhead and sang beautifully, finally coming down in one direct dive to land at my feet. After eating, she gathered soap-root fibre until she had as large a quantity as I have ever seen her carry. This she carried by a circuitous route to one of the smaller trees in the glade and placed in an empty fork about 8 feet from my eyes and at about the same level. (I was standing on the bank watching her). Although this was lining material, there was nothing there to line. She then began $\frac{3}{4}$ song, using as an introduction, the same phrases with which she had been opening her full song a few minutes before. These as noted at the time were something like this:

Very rapid

Crest + climb

— — — — —

Chew it Chew it Weetweetweet Tor kee ta ware ware

These were followed by a succession of complex phrases. Greenie went up to join her. Brownie gathered up again a few of the fibres that had not fallen to the ground and carried them to another part of the same tree, where I could not see what was done with them. I then left.

Nesting
complex
again.

4 song.

I did not look for the birds again until 5:15 at which time Brownie was sitting quietly in Room A as if for the night. It was still cloudy. I did not see Greenie in the immediate vicinity and when I called to see if he was in the glade, Brownie came instead.

Each bird in its own tree for the night. I had to do an errand and was not back again until a little after six. Brownie was on her regular night perch and Greenie was also in his tree, all settled apparently, although I do not know whether he has any particular perch or not. Quite naturally both birds prefer horizontal perches.

Sept. 26th

Shortly before 7 o'clock thrasher song could be heard off to the south east. I think it fairly certain that it was more than 350 yards away. I first heard it from my bed-room, the windows of which on that side were all closed. I went down to the street entrance of the garden and the song was certainly not nearer than 250 yards from that point and the entrance is about 100 yards from my room. Some of the phrases could be distinctly identified. Nothing was seen of B&G (Brownie and Greenie), but at 7:30 loud singing was heard near my south-east corner and I found Brownie there. The other thrasher was still singing off to the south east. Brownie moved back toward the glade and then appeared at the top of the old oak, first calling loudly and then singing full-song. I thought it was Greenie in the distance that she was calling, but suddenly the latter was seen mounting the bare branches to join her and the distant song continued. I went to the old oak. The two birds talked and sang high up in the tree sitting 5 Or 6 feet apart. In her talk Brownie introduced a new phrase which she used over and over again, kaarra, kaarra, kaarra, with the r strongly rolled. Both also used the bluebird-like pewh and a variety of other sounds. They would not accept my invitation to eat and finally went over towards the berry-patch, and at 8:15 both of them were working on the "nest" in Room A.

At 9 O'clock I went to the glade. Brownie appeared at once, sat facing me and preened, occasionally singing a song reminiscent of that of the Green-backed Goldfinch in volume and general character, **chases B** but not resembling it enough to be an imitation. Greenie came running at her with a long, drawn-out hare and chased her for about 6 feet. Both birds then came to me for worms, one at each hand until Brownie jumped up on my knee. They were both very talkative, using many n sounds and much concerned at the rustlings of the Jays overhead gathering acorns. The thrashers kept track of each other closely and when Greenie was disposed to wander, his mate from her position on my knee, would turn her head to look for him and call, once using the call yaycup-yaycup. About 9:15 they went off together, but not to nesting activities.

B&G maintain close touch
B calls G from my knee.
B and young gopher snake.
11:15. I found a little gopher snake about 12 inches long, about 10:45, and took him to the glade, putting him on the ground between my feet as I sat in the chair. He was a courageous little fellow and did not try to run away, but puffed his neck out back of his head, hissed at me and struck viciously whenever I made a movement too close to him. His hiss is not a mere sibilant sound, but has a sort of croaking undertone, with surprising volume for so small a creature. Brownie soon came and stood looking at him and then at me, just as a dog does waiting for orders. He hissed at her and struck, she dodged back, cocked her tail up at right angles to her body, spread ^{their backs} out like a fan and raised her wings until ~~thaxhark~~ almost touched, then danced about him--a very pretty sight viewed from such close range. The thrashers much prefer snakes when they are looking in the other direction, especially when they are running away: but this one would not run. Brownie seemed more curious than anything else, although she did land a few resounding pecks on him at opportune moments. When he retreated slowly under my chair, Brownie followed him and I could not see what happened. She retired to

Snake's peculiar hiss.

B "dances".

B seems only curious.

whenever
 dig and preen a few feet away, but ~~when~~ I stirred up the snake with a twig, she would come and look, sometimes as close to the snake as one foot without showing hostility. She made no clucking sound, but talked a little in soft tones. Her manner was exactly as if she considered it my show and was doubtful what part she was supposed to assume. Finally she went to one of her favored low branches to preen and left the snake--which was still by my feet--to do whatever it chose. She had taken the snake by the tail 2 or 3 times, only to drop it when he turned. Also she had pecked ^{it} 4 or 5 times admidships. If the snake had run, she undoubtedly would have chased it. Brownie went away and I left the snake where he was.

Jays find the snake. 2:05 P.M. About 1:50 there was a tremendous outcry by the California Jays towards the old oak, so I went to investigate, suspecting

Other birds attracted. that the little snake might be its cause. In the lower branches of the tree there were 5 or 6 screaming jays, on the ground near the base of the tree, all within a radius of ten feet of the trunk were ^{several} Wren-tits, one Vigore Wren, one Thrasher, 3 or 4 Spotted Towhees, about the same number of Brown Towhees, one Song Sparrow. A little farther off ^{there was a small flock of Towhees} were one or more Plain Titmice and Green-backed Goldfinches. There may have been other birds that I did not see. When the jays left, the noise narrowed down to the wren and the wren-tits principally.

Strangely enough the spotted towhees made no sound, nor did the thrasher. I finally saw the same little snake lying against the trunk of the tree in a defensive attitude. Most of the birds dispersed after a few minutes, but Greenie, who had now appeared, and Brownie went closer to have a good look. Greenie raised his wings and scrutinized the snake at about 6 inches distance, but neither he nor Brownie offered to attack it. They exchanged some soft comments and then

Greenie inspects him. The wren and one of the last brood of spotted towhees went away indifferently. The wren and one of the last brood of spotted towhees were especially curious and went boldly to within a couple

Young Spot-of feet of the snake; the towhee staring silently and the wren scolded Towhee has good look

ing. I moved the snake over to the berry-patch.

B at nest. At exactly 5 o'clock I went to the dormitory tree. Brownie was fiddling around it. As I watched--the nest being about 7 feet from my eyes--she placed another twig in it carefully without seeming to be disturbed by my presence. There may ^{be} 15 or 20 twigs in it. Temp. 64.

At 8 P.M. Greenie could not be found in his tree (although he may be there), but Brownie was at home. (Bright half-moon, very clear, temp. 58 F. Crickets very numerous in the distance. Their combined chirps blend into one almost steady note pitched at about two octaves above middle C).

Sept. 27th.

The thrashers were singing in the early morning.

Song associated with chase of interloper. At about 7:45, as I approached the glade, both climbed up the old oak and one started $\frac{3}{4}$ song. They then dropped to the ground by the tool house, then climbed up a pine from which the song continued. There was a minute or two interval of silence after which the song was heard at a considerable distance to the north west and I saw both birds on top of a small pine about 50 yards N.W. of my N.W. corner. This is an open slope leading down to the canyon and at this point has half a dozen small pines widely separated surrounded by a low growth of baccharis. They dropped down into the baccharis and reappeared in the top of another pine east of the first one. The song continued from there. **One sings while other chases.** Two thrashers flew out of this tree to a third one still further east, but the song still continued from the second pine. That meant three thrashers. The two from the third pine headed off down the canyon, one following the other. They lit in an oak about a hundred yards away and 75 feet lower. One flew out and continued its flight for another 100 yards or so, soon followed by the other. One bird came back part way and was then joined by the singer, both perching in the top of a tree about 100 yards N.W. of my N.W. corner, part way down the canyon, and the singing continued.

The birds then disappeared. During all of this time, i.e. from 7:45 to 8:15 the birds paid not the slightest attention to me. Singing was almost constant and ranged from $\frac{1}{2}$ to full. As far as I could see the principal singer was largely a spectator, merely following the chase. I think it was Brownie, but am by no means certain. No fighting was seen and I had no glasses.

I call thrashers
from Indian Gulch.

At 9:30 I went to the fence along the north line and stood about 50 feet from the N.W. corner looking down over the chaparral slope into the canyon due west. I heard scripping beyond the street and saw two thrashers appear on top of an oak yds. to the west and feet lower. I began calling at 9:35. The scripping stopp~~ed~~ and both birds dropped from the tree on my side. Between us was the chaparral about 6 feet high and I could just see the top of the tree in which they were ~~sitting~~ sitting. I continued calling and moved to the west fence. In about 5 minutes there was rustling in some scrub oaks forming the southern boundary of the chaparral patch, and I caught glimpses of two thrashers about 50 feet from me and 8

Enthusiastic
return.

to 10 feet up in the branches. They worked their way towards me with occasional loud bursts of song on the part of one of them and low calls by the other. The nearer, when about 25 feet away, flew to the top of the wire fence landing about ten feet from me. I displayed worms and it came rapidly towards me in sidelong jumps, head pointing first east and then west at right angles to the fence, the top wire being too small for it to walk on. The wire is so small that the bird's ^{toes} ~~scales~~ make more than one complete turn around it with the claws on top of the wire, but still pointing in the normal direction.

B balances
on small
wire.

B "in my
face".

This one was Brownie. Due to the height of the fence and the sharp slope she was right in my face, too close for clear focus. She could not balance well on the wire so I gave her a finger to sit on $\frac{1}{2}$. She talked volubly in very deep tones with throat swelling out like a large bubble. Greenie also flew to the fence, but continued his flight

to a tree behind me where he sang loudly a few short snatches and then came to me along the ground. They both then fell to digging under the trees and I left them. During this approach both birds called and sang loudly. I had been doubtful of their coming to me so confidently after the recent excitement and in what is really a strange place, more especially as, having no young, the food problem is not a difficult one at the present time. An hour or so before they did not "know" me, now they talked in my face.

10:45 About 10:15 both birds were in the top of the pine by the kitchen door. One of them, later proving to be Greenie, was making new sounds somewhat like the introductory notes of the Bullock Oriole song, but not, I think, an imitation. Brownie made a long swooping dive of about 100 feet passing directly over my head, so that I ducked involuntarily, and landed near Julio chopping wood under the dormitory tree. There she picked up a twig, carried it to Room A almost directly over Julio's head and began working. Greenie soon joined her, but merely inspected. There is a tame white pigeon here that is always snooping around looking at things. He went over to where Brownie was selecting twigs from the ground and watched her. When, however, he got too close (about 2 feet from her) she dashed at him and drove him away with pecks, although he is many times her size. While working Brownie uttered another series of deep notes that I do not recall having heard before, something like:

ka

taw

11:40. At 11:30 I stood by the dorm., Brownie was on the nest. As soon as she saw me she called softly and worked out to the end of a branch near me and dropped to the ground at my feet. I remained standing and she flew to my hand, hungry for worms. While there she uttered a series of low sound, somewhat like the call of the Slender-

Other new talk

billed nut-hatch. I would represent it by:

Cair-r-r-rh....

Greenie approached on the ground using a similar phrase. I tossed him worms, which he watched like a dog as they passed through the air toward him. He went into the shade to preen, Brownie selected a twig from the ground and arranged it in the nest. It certainly looks now like a serious nest-building operation, previous nesting behavior almost. being followed exactly. (Temp. 72). As a matter of fact, except indefinite for the approach of the rainy season ~~now approaching~~ the conditions as regards weather in this vicinity are more favorable in September and October and often in November, ~~than they are~~ sometimes even in December, for successful rearing of broods than they are in February, March, April and sometimes May. This is an opinion.

6:20 P.M. (Temp. 65 deg. F.) At 5:15 I went to watch the two thrashers digging in the open near the glade. After a time they came to me in turn for worms where I sat on a bank. Greenie came first. When Brownie got her share she started digging where I could have touched her and uncovered a centipede which she bolted with little advance preparation.

At 6:05 the two birds were digging in the berry patch. I remained standing quietly in the open where I could watch the two roosting trees. Greenie disappeared first. Brownie came out into the open and loitered about aimlessly. She then called softly. There was an immediate rustling in Greenie's tree and he flew down to her. They greeted each other with sibilant sounds. Brownie ran toward Greenie with head and tail pointed almost straight upwards and they circled about each other a few times then ran off to the west where they were concealed from my view.

At 6:15 Greenie came running by me rapidly headed for his tree. Brownie was only a few seconds behind and climbed up into hers without

works on nest.

Looks like serious job.

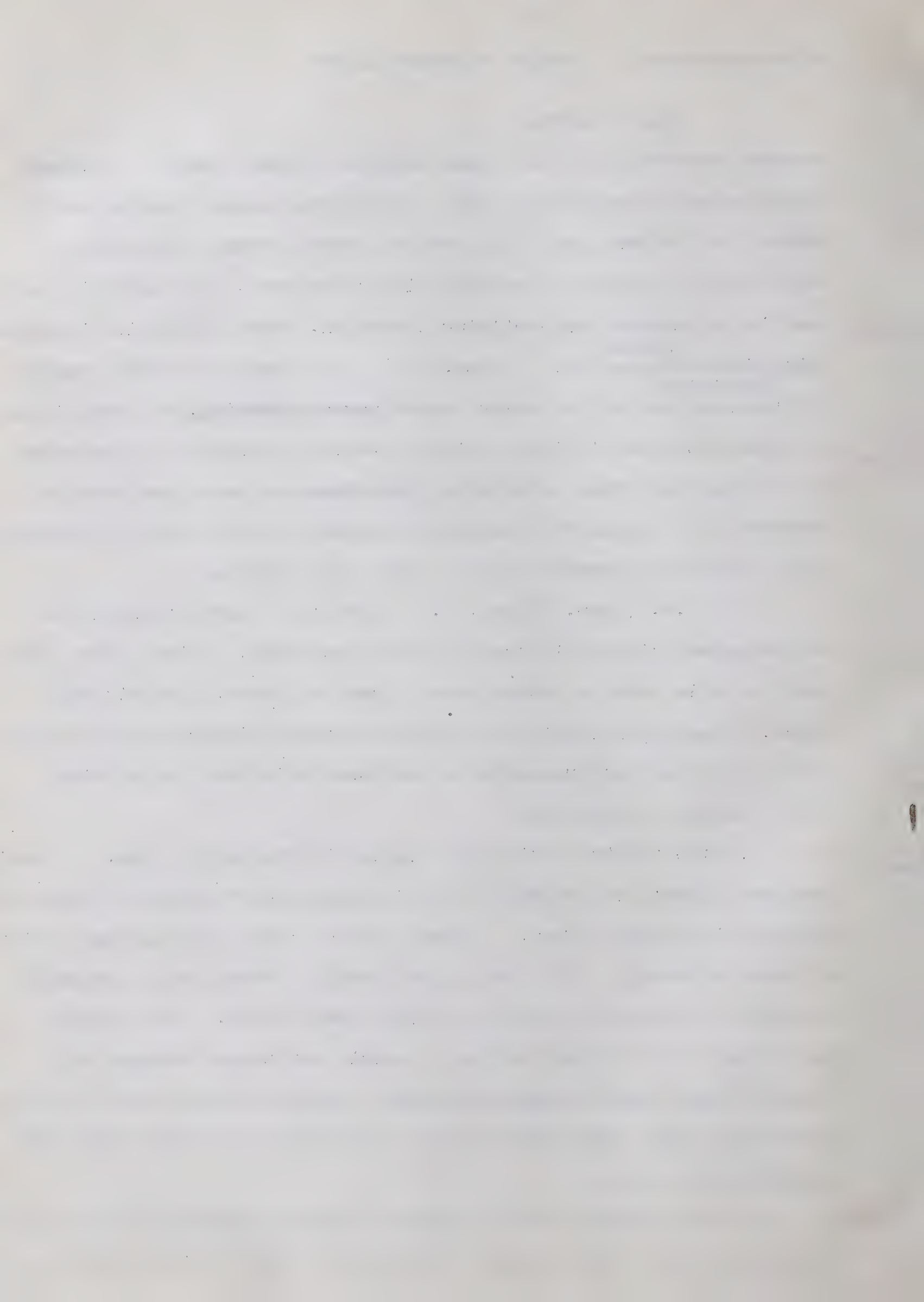
Weather conditions more favorable than in Spring

Centipede eaten.

B calls G out of his tree.

Courting.

They ignore me.



wasting any time. For the last ten minutes or so neither bird paid any attention to me whatever. As I left I looked up into Greenie's tree and he was snugly stowed away.

Greenie's Roost 10:33 P.M. Outside air temp. 61. It took exactly 18 minutes definitely (I.e. 18 minutes searching in one tree) spotted. to locate Greenie in his little oak tree. The tree is only about 10

or 12 feet high with about the same spread, but the canopy is dense and he is well tucked away in it. I am satisfied now that he has been in it on previous occasions when I was unable to find him.

Brownie was on her usual perch--that is, on a certain definite twig.

Any twig will not do. It appears that it should be of the correct diameter to fit their feet properly; must be practically horizontal, say 8 to 10 feet up. neither too close to the ground, nor too high. Evidently they like a screen overhead and below both. They also need quite a little space free of interfering twigs. They are very impatient of twigs or leaves too close to their heads and try to break them off. They are not so particular about their tails and will tolerate their being bent almost at right angles sidewise by some obstacle for minutes at a time.

I am rather surprised at their choice of roosting places. Both trees are right on the edge of the road and on top of the ridge, though there is some shelter from winds afforded by other trees and buildings.

The birds do not stir when I turn a flash-light on them. Their under parts seen thus are just the color of dry leaves

Sept. 28th.

8:15. At 8:05 I went directly to Dorm. A. (Brownie's tree) Both thrashers were in it, Brownie at the nest. Both came down for worms. There is no evident progress on the nest. I still doubt if it is a serious effort.

There was no loud singing heard here earlier in the morning; also the birds were very solemn when they came to me.

Air temp. 62. (All these temperatures are taken under an oak. The sun never touches the thermometer).

ERNEST I. DYER
40 Selborne Drive
Piedmont, California

At 9:15, when I went out to observe progress, Greenie was up in Dorm A and Brownie was under the tree hunting for twigs, but decided to have a worm or two first, then got a twig and went to the nest. It feels as if this would turn out a warm day. (Temp. now 65)

Elder-berries 2:00. No observations were made until this time. The two thrashers are now eating elder-berries in one of the trees in the garden.

This is now two kinds of fruit which they are known to like.

2:45. At 2:15 I went to the glade with a fresh supply of soft-food. Brownie appeared almost at once and filled up. She did not consider the matter of worms at all, but retired to the shade and indulged in a long $\frac{1}{2}$ song. Greenie, who had been " $\frac{1}{2}$ singing" behind me someplace, came in and reported to Brownie first with that indecribable, sibilant sound, had soft-food, then to me for worms.

Brownie looked on without interest. Some minutes after Greenie went

B wipes bill on my trousers. Off about other affairs, Brownie jumped up to my ankle, wiped her

bill on my trouser cuffs, and was ready for business, talking. Her

Almost sings. talk in this position now is approaching under-song at times and she **Snaps insects.** is sufficiently at ease to snap at flies and yellow-jackets while sitting there.

Phrases of under-song. Some phrases in her preceding under-song were:

The quail's

putputput, uttered very rapidly,

Orkut, orkut, yerrrrkit--pit-per-yorri. Purty-purty-purty---quare.

Tinkle, tinkle, tinkle--queeleet--wet year.

Pit-wahr, pit-wahr, pit-wahr, er-r-rket, yor-pe-wee.

Sept. 29th.

Early morning song was not heard here, perhaps because I was not awake in time.

Loud answer from distance. 7:45 At 7:30 A.M. I went to the glade. Everything was quiet. I called and there was an instantaneous response from the north -east outside the property--loud and clear, by two thrashers.

The more distinct of the two was something like this:

The answer.

Yorrk

Bee-voor

Torquita Yerr

Kap

Brownie came sailing into the glade full of enthusiasm and in a great hurry to jump to my knee, although there was a dish of soft-food near at hand. Greenie did not come, but, as it developed went to the "nest". Brownie did not stay long, but climbed the old oak and

A Duet.

called loudly and richly. (Presumably for her mate). Both climbed up into the taller pines and I was treated to a duet; Brownie to my right singing $\frac{3}{4}$ song, Greenie to my left full song. Greenie's song was short, but repeated over and over. It invariably began with the same two preliminary short, ^{soft} notes which I can only approximate as ter,ter .

Ter Ter, Torkeeta, Torkeetit, Torkeetit, Tork - Beel-yay
 Tork - Beel-yay, Poo-leet

is song.

Answer from unexpected quarter.

9:50 A.M. About 9:15 I went all over the place--not a thrasher to be seen or heard. From all appearance there might not be one anywhere in California. I called and whistled once at the western fence, toward Indian Gulch, thinking, however at the time, that they were probably about 500 yards from that point over in Reynolds Territory. My call was, therefore, purely perfunctory and as there was no response, I turned away and was thinking about something else entirely, when I thought I heard a thrasher note in the distance to the west, down in the canyon. I returned to the same spot, called, and here came Brownie and Greenie followed by two California Jays. The jays left when they saw me, but the two thrashers duplicated yesterday's performance. Brownie talked volubly right in my face as she balanced on the wire, i.e. I kept her far enough away so that

Return followed by Jays.

Talk in my face

manner of
clipping
each of small
diameter.

I could focus her in my reading glasses. She stayed there about 5 minutes. Her technique on the wire has greatly improved. Her longest toe would be capable of encircling the wire (counting the claw) possibly three times, if it is flexible enough. This time she pinched the wire, holding it in a location corresponding to that of a nut in nut-crackers, and where there was a cross-wire fastened, used that as extra support. When the birds had finished the worms (Greenie's had to be dropped to him) they spent about 10 minutes at my feet where the ground is baked hard and seemed to offer no prospects of a food supply. Yet in an area no bigger than perhaps 10 square feet they found a lot to eat. I could identify positively but three things: a yellow-jacket, a spider and a moth. They picked up things where I could see nothing (I have no difficulty in seeing this period (.) at ten feet) and also were able to break the hard crust by taking advantage of a crack or some other small break in its surface. Straight hammering (tried by Greenie) was not very effective. When they had finished with this small area, they moved off into the heavy undergrowth foraging as they went.

Breaking hard
crust

2:40. I have spent the last ten minutes in the glade. During this time Brownie spent about 5 minutes on my knee, the burden of her talk being:

B's talk on my
knee.

Pee-e--Youri--tee-tsee

Greenie sat behind me on a branch where I could hand him worms

B tries to
catch a fly.

without rising from the chair. A small fly (I wonder if its B's) flew around my hand and B. made several unsuccessful efforts to snap

Other birds.

him. A Vigors wren fed from the soft-food dish, three spotted towhees

Young Towhee
quick moult.

were in and out. One of them was from the late August brood. He is now fully colored except that his head is light brown with a $\frac{1}{2}$ inch wide black stripe extending over the top from his bill to his black back. This started as a thin line. On August 21st. he was a feather.

less infant in Nest 46. There also were present goldfinches, some kind of a vireo, and a Yellow warbler in full color of the purest yellow. (I can't be certain of these little vireos and other birds that look like them).

Nesting.

5:15. Brownie is up in her nest working on it. Greenie is digging in the berry-patch.

Night roosts.

6:15. Both birds were on their perches for the night at this

Temp.

time. Greenie is especially hard to see. Air Temp. 62. Sunset 5:56 .

Sept. 30th.

Called home from
S.E.

8:33. At 8:15 I went to the glade--everything silent there and no sounds of thrashers any place. I had not heard them earlier. After calling a few times, there was a scrip in the distance coming from an easterly direction. Recalling the experience of yesterday when one call was enough to start them, I stopped. In a few minutes both birds came in from the east without a sound heard since the first scrip or two. Both came to me at once and started talking, Greenie being the first this time. After only a few worms, Greenie began gathering soap-root. Brownie followed suit. Both started for the dormitory, Brownie's tree. (Call this Dorm. B and Greenie's tree

Gathering
material.

"Nest" a mere
heap.

I watches
and
comments.

Dorm. G). Greenie dropped all his, but Brownie carried hers up to the nest and distributed it carefully, although the "nest" is only about as big as my fist and is a shapeless snarl. Greenie came to watch with his chin over the edge to get a close view. He said softly: "Pit-yuri", to which Brownie responded with the blue-bird call.

I helps.

Brownie stepped out for a moment, and Greenie took her place, and changed one twig, moved to a branchlet a few inches away and, when

Temp.

I left was looking off into the distance solemnly. (Temp. 68)

At 9:30 I went to the glade and sat down. A soft call sounded behind me; Brownie, whom I had not seen, was in the tree behind me. She came down and sat on my knee saying:

B talks on
my knee.

Chee chee ta tau

"The" fly. "The" fly was on top of her head. She was in no hurry to leave, but preened, scratched and ate worms, perfectly at ease while sitting there.

G's quick lunch. A few minutes after she left Greenie came charging in on foot from some unknow place, went directly to the soft-food dish, gulped a few mouthfuls and bolted, without looking at me, as if he had to catch a train.

Nest building. When I left the glade both birds were picking up nesting material in the berry-patch. Greenie dropped his, but B. carried hers to the nest. She came down and got a large twig and after a hard tustle getting it through most of the numerous obstructing branches and twigs, finally lost it when it caught and fell to the ground. She replaced^{it} with one which she found loose in the tree, but this also got entangled and fell. This was enough for the present and she left.

G inspects lath house. Greenie, during this performance, was inspecting the interior of the lath house and trying to find some way out other than the door by which he had entered. This he accomplished by discovering the only other possible exit--an opening left by a missing lath which I had knocked off by driving a golf ball through it, having achieved a hook after having allowed for a slice.

Real nest not expected. The nest-building urge is certainly acting strongly in these birds, but, as in the present incident, in the off season, it quickly appears to lose its force when encountering some minor obstacle. notwithstanding that B&G have been seen recently in courting behavior. I still do not think that this is a serious effort, I have seen no evidence here of other birds acting in this manner.

Little progress. Progress at the nest is insignificant.

B's breast now lighter Since the moult Brownie's breast is distinctly lighter in shade than Greenie's.

6:00 P.M. The temperature has dropped from 80 at noon to 62 now, due to a fairly strong breeze from the north. Neither thrasher was in its night perch at 5:50, although I had just fed them both and each

went off in the usual direction after gathering nesting material.

Night roost. I shall be surprised if they do not seek other quarters tonight on account of the wind.

During the course of the afternoon both Brownie and Greenie stood a few feet in front of Mr. Will Sampson and me facing us. Mr. Sampson, without my bringing up the subject, at once noted the difference in breast color and commented on it. I then told him that this difference shows up well by flash-light when I am looking for the birds in their roosting places.

Night roost. 6:32. Well, I am surprised. Both B&G are in their accustomed roosting places. It took about 5 minutes to find Greenie. If I should go out again, ^{now} it might take as long once more.

October 1st.

At 7 A.M. a thrasher was singing loudly not far from my window.

9:07. Greenie and Brownie in the glade came eagerly for worms.

Active nest building. Both gathered nesting material and made directly for Dorm.1, and as I passed that tree, they were picking up large twigs and carrying them up into it. As judged by activities in carrying materials, the nest should be about the size of a hay-stack by this time instead of being what it is.

Meaning of nest location? It will be noted that the focal point is in Brownie's tree, not her mate's. This may mean something as to the sex of the two birds.

"Worm" in thrasher speech! I "asked" Brownie, sitting on my hand, "How do you say worm in thrasher language?" The answer was: "Yip-yipperoo". So I suppose that is it!

Sitting on nest, At 12 M. She was sitting quietly on the nest structure. Her mate was also resting nearby in the same tree.

Eating elder berries. 4:25. I did not feed the thrashers this afternoon until 4:15, at which time Greenie was eating elder-berries and scripping.

I went to the glade, and he and Brownie lost no time in coming, in fact Brownie ran out of the glade towards me as I approached.

Permits G
to share
worms.

B works
hard.

Brownie jumped to my knee and Greenie to the chair alongside me so that I could hand them worms alternately with one hand. This is the first time that Brownie has been satisfied ~~with~~ to allow Greenie every alternate worm. When finished, Brownie went immediately to the nest and really worked hard, struggling up through the obstructing branchlets with large twigs that taxed her strength. I left her still at it as I came in to write this memorandum.

Age of birds? If birds acquire one ring around the ankle (?) for each year of age, Brownie is 4 (or 5) years old. I have been watching these scales or rings on her for some time, but have not had the same clear view of them with Greenie. I had a good chance just now, but was so excited by his unusual tameness and boldness that I did not think to look until he had gone. As the notes some time back show, I early
G younger? got the impression that he is a young bird. I got the impression
Eye color. that his eye color might be changing, but got only a fleeting glimpse under conditions not too favorable, so it is doubtful.

In night roosts. 6:20. Greenie and Brownie are in their respective night quarters. It needed but a few seconds to find Greenie this time.

Temp. Temp. 59 , clear, no wind. At sunrise this morning it was bright and clear here, but a blanket of fog covered everything below about 400 feet elevation.

October 2nd.

Morning song. 9:00 A.M. Thrashers were heard singing at 6:30 on the west side of the house. At 9 they were not to be found on this place.

At 9:45 Brownie came to eat out of the food dish as I was filling it. After having some worms she disappeared. I called, but Greenie did not respond; however, as I went toward Dorm.A, he was seen approaching the glade. He joined me at the tree where Brownie was already
B works. working at the nest. He came and got worms. I could see no change

Eye color. in his eye color and, while I could not be certain, there seemed to
Age. be the same number of ring-scales about his ankles as Brownie has.

both working. He then carried a twig up to the nest, Brownie stepping off to give him access, and for the next 15 minutes, he did not leave the nest at all. During part of that period Brownie brought up twigs which they both arranged. A good part of the time was occupied in trying to remove interfering twigs, which seemed to annoy them greatly and in rearranging those already in the nest. Several times they appeared to make an effort to flatten out the mass by sitting down on it hard and turning to face in different directions while doing this. Greenie left after 15 minutes to explore about the immediate vicinity, singing sub-song intermittently, while Brownie continued at the nest for another 20 minutes. During this time she carried up several twigs. Once, while she was on the ground, I tossed her one which she took. Both of them frequently rested and seemed to study the situation, standing on top of the crude mass, looking closely at all portions of it, and, it seemed, hopelessly. I would not blame them if this were their states of mind, for the first stage of a nest must be discouraging. The twigs have little tendency to stay where they are placed until there is a sufficient weight in place and enough forks and prongs caught more or less at random on the growing twigs of the tree, to give some stability. Again merely to carry a twig to the nesting site is a fight all the way as soon as the bird tries to force its way through the foliage and deadwood inside the tree. It is like trying to pull a cat backwards by the tail across a carpet.

B used twigs
furnished.

About 11:15 I went to Dorm. A, removed a few obstructive twigs and placed a few loose ones near the nest. When I had a thrasher call not far away, I removed the ladder and sat almost under the nest, which would then be about 6 feet from my head. In a few minutes Brownie came and got two or three worms, went up to the nest, found the loose twigs and began putting them in the nest. She then came down under the nest and pulled out loose twigs that were hanging down and carried them up on top. She seemed not to mind my presence

in the least.

B answers G's call, richly. A low call was heard perhaps 100 feet away. Brownie raised her head and replied, full voice, with a series of rich phrases of exceeding complexity. This was about 11:45. (It is now 12:03)

New call by G. From the top of the old oak another full-voiced call sounded of several phrases, and then an entirely new one consisting of three long, loud, clear peers all pitched the same and on one note without variation of any kind. When I tried the piano to locate the pitch, the third C above middle C (Counting middle C as C1) seemed to satisfy my ear exactly. Brownie left the nest to go to the glade and I followed.

B's loud call from my knee. When she jumped to my knee, Greenie came out of the brush for his share. She turned her head when he was about 3 feet away and greeted him with one loud clear note to which he responded, but softly. This is the shortest distance at which I have ^{heard} a full call, and I got the impression that Brownie did not know he was so near. They picked up twigs after they had had enough to eat and left in the direction of Dorm. A.

Beginning to think this nest is real. It is getting harder to persuade myself that, ⁱⁿ this nesting activity I am witnessing the operation of a mere reflex and that it will spend itself without worth-while accomplishment in a few days.

B's full song from ground near visitor. At 2:30 I went to the glade with a visitor. Greenie came first; I had just left Brownie working at the nest. G was pretty shy.

Surprising performance. After about 10 or 15 minutes, during which I did not call, B came running in, stopped about 8 feet from us, and uttered a series of full-voiced phrases, much to my surprise. I could not identify any of them with those recorded in these notes, but they were of great beauty, and my visitor who had never heard a thrasher before was entranced and a little bit awed by the power and richness of the song and its unexpectedness. I had just been explaining that these birds do not sing very frequently at any time of day and that such singing as they do is mostly in the early morning, but that they may break out at any time. Brownie was not shy of this visitor, but acted almost as if

I were alone. After eating she climbed up the old oak and again sang loudly. From there she went to the nest and worked a little.

6:25. Twice more during the afternoon B was at the nest. At 6 both were digging. I decided to see if I could carry the pitch of Greenie's peer call of mid-day in my mind; so I whistled my recollection of it first and then sounded C3 on the piano. I found I was whistling D3

October 3 rd.

Checking memory of pitch. **Morning song.** Early morning song was not heard until about 6:45. (Julio says he heard them at about 5).

7:50 A.M. I went toward the glade at 7:15. One of the thrashers was perched high on the old oak singing full song. As I entered it dived down and both birds were waiting there as I took my seat. I was unable to tell which was the singer. Both came to me immediately, Brownie to my knee and Greenie remaining on the ground. Brownie permitted me to hand worms alternately to Greenie without attempting to interfere. After only three or four worms apiece the birds left side by side for Dorm. A. I expected to find them working there, but Greenie mounted to the top of the tree and sang loudly, while Brownie sat almost directly below him about 3 feet from the ground doing nothing. Both birds seemed to be waiting for something to happen, although not timid or wary. Greenie looked in all directions between songs and when he finally dropped to the ground, both birds disappeared, although I could hear them talking. The surrounding trees were noisy with both California and Steller Jays and this may have had something to do with the thrashers' behavior, although for some reason which I cannot explain, I got the impression that there was a third thrasher present.

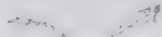
Dividing worms. **Watchful singing.** 8:30. Both birds are wrestling vigorously with twigs at the nest and doing no talking. I do not know how long this was kept up.

Nesting in earnest. 10:04. About 9:50 one bird was at the nest but left for the glade

as I approached. I went to the glade and both came to me, Greenie on the chair beside me and Brownie as usual on my knee. Both were very hungry. Brownie kept repeating a soft cat-like call:



M o w h



M o w h

O as in cow; the h on the end is supposed to represent an aspirated sound. The arrow represents falling inflection at the beginning of the syllable and rising at the end. Greenie used a similar call but with more of a whine in it. The general effect of both was pleading.

They both returned to the nest when their appetites were temporarily satisfied.

B poached on G only once.

10:30. One of them tugging very hard at a refractory twig at the nest.

11:55. At 11:15 I went to the nesting tree, finding both birds busy. When they left I placed a step-ladder so that I could put some twigs near the nest. While I was doing this Brownie suddenly appeared close to my hand (about 6 inches from the nest and below it) with scarcely a sound. I offered her a stem of a brake about a foot long which she took in her bill while I still had the other end in my fingers and tried to put it in the nest. While she was struggling with it I placed a few twigs here and there, some being stuck in the side of the nest loosely so that the birds could get them out easily.

Brownie did not like this, and although she made no sound and showed none of the usual evidences of anger or excitement such as ruffling up the feathers, etc., she let go of the brake, moved over to my hand (about a foot) and pecked me hard twice, showing no fear while doing so and not retreating as if expecting retaliation. I continued placing twigs and she followed my hand and pecked me several times again. Although she accepted my offerings, she evidently did not like

my interference, so I stopped. To see if her annoyance persisted, I sat under the tree on the ground and displayed worms. After one effort to give the nest form by pressing her breast against it on the inside (Although there is really no inside yet), she came down friendly enough. Part of this time Greenie was helping. A few minutes afterwards I went to the glade and both thrashers came as usual; so there were evidently no hard feelings. The returned to the nest again. (Temp. 75)

If this activity of theirs is merely a reflex expression of an instinctive carrying out of a preordained pattern, then human beings are fortunate in that they have no pattern to follow which involves involuntary dragging of huge logs up into the tops of tall trees without assistance.

Shaping
Interior.
Harbors no
resentment.

Testing my
memory of
pitch. 1:15. I made another test of my recollection of Greenie's peer call of yesterday. This time I was a half-tone sharp.

1:20. I tried it again and found that I hit C3 "right square in the middle". (See note Sept. 20, 1934)

B "thinking"
This is regular
pattern.

1:35. Brownie is "thinking" in the nest.

3:45. No observations in between. Brownie is doing some more thinking in the nest which is now a wide, loose platform. Perhaps she is wondering how soon the rains will come. These notes show that in bona fide nest building, "thinking" is an indispensable part of the procedure. On such occasions the bird is silent and looks down upon one with great complacency.

A pat response. 6:20. Mr. Brighton Cain and Mr. Hopkins were here about

4:30. I showed them the thrasher nest; no birds were there. We went to the glade; the thrashers did not come for a long time. Finally they appeared, somewhat shy, more especially Greenie, though Brownie jumped to my hand to eat worms and, incidentally, caught a fly while there just as I said to her: "Catch that fly". She jumped on Mr. Hopkins' foot when I held a worm by his knee, but would not

go higher, hesitating between my two hands until she decided to leave.

Behavior true
to form.

I told my visitors, that if she behaved true to form, she would react to the stimulus of food by going to the nest and working on it, and so it proved.

Night roost. 8:15 P.M. (Temp. 62) My technique is improving--Greenie was spotted at once in his usual roost. Brownie was in hers, about 6 inches above the nest and a little to one side.

October 4th. Sunrise, 6:07 A.M.

Early songs. 6:00 A.M. As I became conscious of out-door events at 5:40 A.M., I heard the thrashers singing full song. I went out in pajamas and slippers (Temp. 62, apparently constant all night). The sound of street-car traffic was very loud. The thrashers were silent. The jays, quail, wren-tits, golden-crowned sparrows (recently arrived), Gambel and/or Nuttall sparrows, wrens were calling or singing according to their kind. Distant cocks and ducks could be heard--no dogs or hens.

The thrashers were not at the nest, but one was seen outside the glade digging. I went in and sat down. Both birds came in within a few seconds, Brownie sitting on my bare ankle, Greenie (the first to come) jumping to the chair beside me, both talking a little.

Work. When finished they went directly to the nest and to work.

About 7:30 I could not find the thrashers and they did not respond to call. At 7:45 Brownie came to me in the glade. After a few worms she gathered a billful of soap-root fibre, part of which she dug out of the ground. Before reaching the nest it was all dropped somewhere, perhaps when she called Greenie loudly:

B's call.

Yerk

Yerk

Pit-ye

Pit-yerr

Yerr

Method of
shaping
interior.

A moment after she reached the nest Greenie carried up a twig and they both became very busy. At this stage at least part of the operation of giving it a bowl shape is performed, not by laying twigs around

I watched her till closely and found that she opened and closed it ,
e
but the opening was very slight.

Nest now
ring shaped.

the periphery, but by spreading out the loose mass from the inside with bill and breast. By doing this, they have, at the moment, made it almost into a ring (Toroid, annulus). That is, it has almost no bottom.

G in nest.

Standardised
approach.

9:00. Greenie was sitting quietly in the nest, Brownie in the act of coming down. She found a suitable twig on the ground (one that I had placed there) and ran quickly up the tree, following a route which she has now standardized. This follows a sloping, main branch and just under the nest makes a helical turn once around the branch, then through a light barrier of leaves to the nest. Even this obstacle is difficult to penetrate. There is no unobstructed route. B placed the twig beside G and G left, B remaining to dispose it properly.

G in nest.

Working
fast.

9:27. At 9:15 I went to the nest. G sitting in it. The preceding action was repeated. They are working rapidly now, but have great difficulty in getting material to the nest unless it is very small. Much of it is dropped or abandoned. Both took time off to get worms from me. They are very quiet, but not secretive. Since I was snubbed yesterday I have contented myself by gathering twigs for them and placing them at the foot of the tree. These they use. In attempting to carry one of them by the standard route, Brownie saw that it could not be done. It was a twig with many branches. Accordingly she tried another route, approaching from above, and had almost succeeded when it caught, and in her efforts to dislodge it, she slipped and fell almost to the ground before recovering. The multiplicity of twigs and small branches prevented her using her wings effectively, thus causing her to drop further than she would otherwise have done.

B falls.

Exhausting
work

The work being done at present is exhausting and the birds rest frequently.

At 1:30 no birds were at the nest. I went to the glade without calling and Brownie came running and flying to get worms. After 3

or 4, she left for the nest, but decided to rest on the ground in the shade of a pine; also there was a Cooper or a Sharp-shin sailing about. (Temp. 86)

Hot.

Good progress. Quite a bit of progress was made on the nest during the forenoon. It is larger in diameter, but still has a large hole in the bottom.

B rests.

2:45. Brownie was lying in the nest with her bill open to keep cool. Shortly after I arrived she began shaping it with her

Now using flexible twigs.

body. They are extending the sides upward, using flexible twigs from the Baccharis and the Old Man Sage, which I thought they needed, so placed a supply on the ground beneath the tree. Up till now they have used oak almost exclusively on this nest.

Late working.

6:00 P.M. The birds, especially Brownie, worked often at the nest. They stopped but a few minutes ago. About 5:30 I gave them

Very hungry, both all the worms they wanted, feeding a bird with each hand. B did

not not attempt to take the worms offered G. They went outside the glade to dig, but repeatedly came in for more. Each time they came

Changing talk.

to me their talk changed from their conversation while digging outside. This must have some meaning back of it. I am unable to approximate the phrases used. At 5:50 Brownie was again at the nest placing one of the flexible twigs. These seem to be just what they like at this stage. (Temp. now 76, day's max. 88)

Night roosts.

10:15 P.M. Brownie and Greenie are in their accustomed roosts. Again I had difficulty in locating him, although he seems to be on the same twig. (Temp. 73, unusually warm for this time of night).

Oct. 5th.

Accelerated work.

8:10. I heard no loud song this morning. I have been watching nesting operations since 7:30. The birds are working almost frantically. During this period Brownie, who I should say is carrying up about three twigs to Greenie's one, would not pay the slightest attention to me, although I sat beside the tree where she was getting

the twigs from the ground she would not even look at me. A worm tossed where she could not ignore it was hastily gulped and a twig immediately seized and a dash made up the branch to the nest. Greenie is but slightly less preoccupied than Brownie. He will look at me occasionally between trips as if expecting a worm, but will not put

Rate of work himself out to get it. During this period they made from one to two trips per minute to the nest.

**Extreme
zeal.**

The main branch leading to the nest starts from the ground.

The present procedure is to run up this at full speed; no more inspection of obstacles ahead and deliberate selection of the easiest path. While the route has, in general been standardized, some divergence ~~is~~ at the terminus is made at times in order to reach directly some other portion of the nest. On these detours minor obstacles are encountered, and these the birds go through by main strength, often losing both their twigs and their balances in the process.

**Forcing
through
obstacles.**

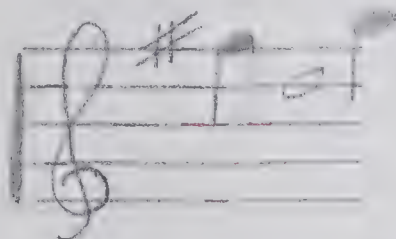
Very hungry.

9:15. At 9 o'clock both birds came into the glade, when I called,

from the direction of the nest, both very hungry. Brownie again

New talk.

had new talk, this time of flute like quality conforming very closely, according to my ear, with our music scale in that I could detect only full and half tones. This is it:



Between phrases as above there was a "filling" of thrush-like notes. When finished eating, both birds picked up material and departed for the nest.

(Temp. now 75, minimum during night 66. The official Weather Bureau maximum for San Francisco was the same as here, 88)

**Switch to
ribbons.**

12:30 P.M. I went to the nest at 11:30. Evidently the most arduous part is done, for the birds were carrying up ribbons from the soap-root. They worked at this until 11:50 and ceased abruptly.

I furnish
soap-root.

I gathered a few soap-root bulbs, stripped off the fibrous outside in ribbons (for it is not the fine fibre that they need now) and placed a supply on a flag-stone at the base of the tree. The birds remained away until 11:25, when Brownie came to my chair under the tree for worms, called Greenie from my knee, then began carrying up the ribbons which I had placed on the stone. Pretty soft! It is 86 deg. and the thrashers are going about with their bills open, and their wings drooping and held out from their sides.

Reaction
to heat.

B flies to
bare arm.

1:40. Temp. 90. At 1:30 I went to the glade without calling. Brownie shortly entered and, instead of jumping to my ankle or knee as usual, flew up and sat on my bare fore-arm with great solemnity and saying nothing. When worms were not forthcoming at the desired frequency, she took the matter into her own "hands", then went back to

superciliary work. Her plumage is flawless. The superciliary stripe is unquestion-
ably longer, stripe longer,
ably longer and curves around to the back of the head slightly. The

Emblances
to Wren.

are I see of these birds and the Virginia Thrush, the more alike in
general appearance they seem to be.

Sub-song declines. During the past few days sub-singing has practically ceased.

B in nest.

2:04. Brownie sitting quietly in the nest with only bill and tail showing. Certainly they are carrying out their pattern faithfully.

6:30. I had little opportunity to watch the birds during the afternoon, but they were seen at work on several occasions, and once one of them was heard to sing full-voice for a short time, so that a visitor (A.R.H.) present at the time recognized it as the song which had been puzzling him at his own home about 20 miles from here.

Night roost. This visitor and I went to the glade; both birds came and showed little embarrassment in his presence. About 6:30 ^{each} bird was in its accustomed place for the night.

October 6th.

Only a few calls were heard early in the morning. At 7 o'clock

neither could be found.

About 7:50 I called toward the glade and got an answer. Both birds came at the same time and I fed both at once. They then began to pick up soap-root, but abandoned it and loafed around. I went to the nest and, in a few minutes, both came and picked up soap-root from the supply which I had placed on the flag-stone, working side by side. Greenie was the first to carry up a load. They have used up nearly all of it. Work began at 8.

The talk while feeding this morning contained few familiar phrases, although Greenie said pit-yurki once or twice.

9 A.M. (Temperatures: Now, 72. Yesterday max. 91, min. 65. At San Francisco, max. 92, min. 63. Short periods at these temperatures are to be expected at this time of year, although "everybody" always says: "I never knew, etc.." These figures may be exceeded by several degrees).

At 9 the two birds were in the vicinity of the nest and another thrasher was singing in the canyon several hundred yards to the west.

I gathered a supply of soap-root bulbs and pulled them to pieces beneath the nesting tree. Brownie, who was up in the nest, came down, gathered them up at my feet and carried them up to the nest. This team-work makes their task immensely easier.

10:20. I sat under the tree, a hawk, which I took to be either a Sharp-shin or a Cooper, appeared on the ground about 40 feet away, under a tree. There was one call from a Spotted Towhee, then a great silence as the Linnets and Purple Finches which had been singing freely, suddenly stopped. The thrasher at the nest appeared undisturbed. The hawk flew as I started for the house to get a gun, but not far, so, on my return I potted him on the last flight he will ever make. I took him to be a male Cooper, length 16 inches, wing-spread 28, but there were four bands on the tail instead of three as described by Hoffmann and there was no bluish tinge on the back.

had
All Cooper and Sharp-shins that I have examined here have four bands, and this has puzzled me in view of the description cited. So I shall take it out to the Museum of Vertebrate Zoology at Berkeley for identification.

Brownie's
reaction to
lead hawk.

I took the hawk and held it in my hand about 8 feet from the thrasher nest--Brownie on duty. She kept perfectly still. I placed it on the ground, held a worm over it and called. B came out of the nest and peered down as if to fly to me, but instead began to call quilllick very softly and moved about in the tree looking down, first from one side of a branch and then the other, repeating the call. I moved ten feet to one side of the hawk and continued to offer worms. B moved over to a position above my head, still calling the same quilllick, but looking at me instead of the hawk. However, she would not come, but went off to the glade.

Miss Wythe
identifies hawk.

12:15. At the University Miss Wythe very kindly made a careful comparison of the hawk with skins on file and the bird was identified as an immature Cooper. Incidentally most of the skins of Cooper and Sharp-shins examined showed four bands.

Nest location
unfavorable.

12:50. A fairly strong breeze from the north is sweeping over the crest of the spur, giving a foretaste of how untenable the nest

Birds retreat
to S. slope.

will be in really inclement weather. As it is, most birds, including both thrashers have gone to the south side of the ridge. I left the latter birds in the glade sunning and generally enjoying themselves. Greenie sang a few snatches of almost full song from the ground--an unusual occurrence. He is using also for conversational

G's nut-hatch
call.

purposes the phrase which sounds so much like the Slender-billed Nuthatch. The temperature has dropped from 78, this morning's maximum, to 68.

B tries out nest
in strong wind.

3:25. Up to this time the thrashers have not been seen at the nest. Brownie is in it now, seemingly giving it a trial to see how it feels in a strong wind. Greenie has gone back to sub-singing

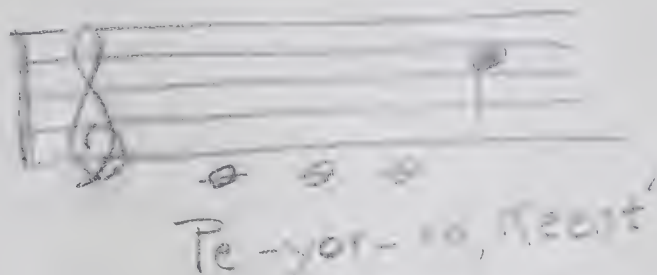
Thrashers
loaf.

now that conditions favor his loafing with a reasonable excuse.

Most of the time since the last observation the thrashers have fooled around on the south slope. Once, however, Greenie climbed the

G sings.

old oak and sang a few bars loudly, beginning with:



(Temp. 62). In the living room, where all curtains have been drawn all day it is 80. (Latter temp. unreliable)

4:00 P.M. A fog is approaching from the north-west. Simultaneous readings made on three thermometers which have been found to check reasonably well with each other, show:

Comparative
temperatures.

	strong	
Shade temp.	in the wind, 10 feet from nest,	56 deg.
"	" " upper garden in lee of house	60 "
"	" on south slope, slightly breezy	66 "

Night roost.

6:02 P.M. I thought surely Brownie would not occupy her regular roost with a chilly wind from the north-west, but she is there. There are literally thousands of places about the grounds where it is an almost perfect calm. Even Greenie's roost only 30 or 40 feet away, but still on top of the ridge, is practically windless tonight on account of its location with respect to the pines. Other birds (probably Brown Towhees) were being driven out by him as I looked up into his tree.

G drives out
birds.

October 7th.

7:40 A.M. At 7:25 I looked for the thrashers at the nest and in the immediate surroundings, but could not find them. I went to the glade and called; both came running from the direction from which I had just come. Brownie jumped up to my knee with an involuntary pip! (perhaps the first symptoms of pneumonia from having slept all night in the wind!). I fed them both with two hands, and after only

B pips.

Now taking
lining.

a few worms each, both began collecting soap-root fibre, selecting single strands, and ran off to the nest. These soap-root fibres eventually become scattered over a wide area and often are partially embedded in the hard ground singly, from which they project like coarse hairs. The thrashers pull them out, unless the earth is too hard. Some of them are ^{so} strong that the birds can not break even a single strand.

Hole in nest.

The nest still has a hole through the bottom. This is caused by the birds pushing the material towards the edges in order to give the structure a hollow shape.

8:30 A.M. (Temp. 56. Overcast; no wind). Brownie and Greenie came to me for worms in the glade, Brownie on my knee, Greenie on a chair beside me. The policy of non-interference with Greenie's worm supply seems to be accepted by Brownie. After eating they gathered sheaves of fibres for the nest and took them there.

B mimics
tree toad.

Brownie has introduced the tree-toad song in her repertoire. She has been approximating it for some time, but just now while sitting on my knee, produced some excellent imitations:

Creek it Croak it

Comparison
of relative
strength of
eating and
nesting
impulse.

About 1:30 P.M. Mr. Sampson and I watched the thrashers in the glade. Brownie had no hesitation in jumping up to Mr. Sampson's knee to get worms. When she gathered soap-root fibre in front of us, I experimented to see which impulse was the stronger at the moment: most brilliant or worm-eating. The worm won three times out of three.

Wren wins
handicap race.

Once she merely dropped the fibre and came for the worm; once she threw it away with a side flick of her head and once she brought it with her and dropped it at my feet. In a contest between her and a wren to see who would get the worm first, the wren having a very liberal handicap of a couple of yards, the wren won by about 2 feet and went

off with the prize. Brownie accepted the defeat without resentment, but made several audible comments.

The glass
house.

Later in the afternoon I placed a glass house in the tree about 2 feet from the thrasher nest. This house is about 43 inches long, 15 inches wide and 12 inches to the eaves. Except for the light frame, it is entirely of glass, and has no floor. The glass is daubed with ^{spots of} green paint in an effort to simulate the appearance of foliage as seen from the inside. A few perches of different diameters are placed inside. The object is to see if birds of any kind will use it as a shelter in inclement weather; but primarily if the thrashers will use it. If the thrashers should, it is considered improbable that more than one will use it at the same time, due to what appears to be their propensity for roosting apart. Two panes of glass are omitted on each side near one end to allow of side entrance if preferred.

October 8th.

B in nest.

At 8 A.M. Brownie was in the nest sitting quietly. I went to the glade and called. Greenie came for one worm, gathered fibre

Not disturbed
by house.

and went toward the nest. I got there first. He walked over the roof of the glass house and relieved Brownie, who then had a few worms and then began gathering fibre. The presence of the house does not seem to bother them. The house gives no shelter to the nest, but is so located that the birds can not fail to pass near it in their trips to and from the nest.

10:45. At 10:30 I went to observe the thrashers' reaction to the house. Brownie was in the nest. Greenie soon came with soap-root.

G goes through
house.

Much to my delight, he included the house in his route, entered at one end, used the perches and came out the other end, thence to the

B ditto.

nest. Brownie on leaving, used the same route. On returning ditto.

More dittos.

Greenie, on leaving, ditto. Brownie on returning, ditto. I then left to record this observation. So, then, they know all about the house, inside and outside, already, and I hope that its attractions will appeal to them as a shelter. I wish the nest was inside of it.

Move nest
inside?

I may get up enough courage to move it there, if it develops that this is a genuine effort at rearing a brood.

Visits in house. About 11:30 I went over to Dr. Reynolds' and, on my return, he came back with me to see the thrashers' nesting operation. The birds were not at the nest, but in a few minutes Brownie came to the glade, had some worms, sang a few snatches, and when we returned to the nest, both were on it. One left by way of the house, as it appeared sitting in the nest. We watched the other for a time and then looked up into the house. Brownie was sitting on one of the perches inside as placidly as if she had designed and built the structure herself for that special purpose, and was not at all disturbed by our presence. My luck continues.

Much singing. At 1:40 both birds were in the tree near the glade, very vocal. There was a wealth of phrases; a few of them I caught more or less, such as (noted at the time):

Yurk Yurk Chipper-chipper Pureet Bewick, bewick, Repeat
Curre-curre-curr Tsip

House now on regular route. At 1:50 both came to the nest, passing through the house. One sat quietly in the nest, the other on the rim. Brownie (in the nest) remained there until 2:30, sitting quietly, then went to the old oak and sang loudly, only a few phrases being "catchable", such as:

B's song. Pit-yor, pit-ye, Chip-chip-ye, Churr, Churr, Cleely-tsùp

Prilly, prilly, prilly. (The last three prillies much resembled the mocking-bird).

In 2 minutes Greenie came with fibre for the nest and I left to receive visitors.

Full song. At 4:40 no birds at the nest, but one singing loudly from the old oak, using a great variety of phrases, few of which I either recognized or can approximate. It probably was Brownie, for it was she that came when I entered the glade. Greenie did not appear at this time. B took two almost invisible fibres to the nest, passing through the house en route. When I left a few minutes afterwards B sitting she was sitting in the nest quietly.

A day of singing. The birds have sung frequently today, much more than usual. It has all been full-song.

Hole in nest closed. The hole in the bottom of the nest has been closed, but the sky can be seen through interstices in the structure at many points.

Singing not affected by weather. (Temp. 56) It has been a chilly, overcast day, but with little wind. This has not affected singing adversely, it appears.

Brownie missing at usual roost. 6:15. At exactly 5:50 Brownie, who had been taking worms from me under the nest-tree, went up to the nest by the old route. In order to give her time to choose her location, now that she has the option of the house, I went to look up Greenie, finding him comfortably settled. I returned to see what had been Brownie's final choice, and for 15 minutes searched the tree in detail with a flash-light, giving practically all of that time to the house, her accustomed roost and the nest. I had practically given up three or four times, when I saw the end of her tail projecting from the nest. Now, I wonder what this means. No use theorizing; but this is the first night of occupancy. The amount of singing was unusual today. I have not considered the nest as completed. Brownie had one shift in it of long duration today, as noted, and thrashers begin incubation with the first egg. That is about all I can think of bearing upon the phenomenon. I wish she had roosted in the house.

Search for 15 minutes. She has moved to the nest.

Search for 15 minutes. She has moved to the nest.

October 9th.

8:00 A.M. At 7:45 I noted that there were no thrashers at the

nest and that one of them was making a sound like a distant dog at the old oak. I went to the glade. Greenie came at once for worms.

Barking.

The "barking" in the tree continued: Row, row, row. (O as in cow).

B answers
my bark in
kind.

Brownie soon dropped down for her share of worms and the barking ceased. As she sat on my knee, I row, row, rowed at her, and she promptly responded in the same way. Each time I repeated this phrase she answered with it until it was time to join Greenie gathering soap-root fibre for the nest at my feet. The nest, therefore is not finished and reference to preceding notes will show that earlier nests were occupied for considerable periods of time before they were finished.

Lining.

8:55. Both birds are placing lining in the nest, using the house as a highway. Brownie evidently has the "dog complex" this morning. Just now, from a dead branch of the old oak, she leaned over, ~~and~~ looked down into the glade and whistled for a hypothetical dog several times.

B whistles
for dog.

B summons
G.

10:15. At 10 Greenie was sitting quietly in the nest and was replaced by Brownie. I went to the glade and Greenie came for worms, eating from the box in my hand. Brownie called loudly from the nest:


We-you-hickey, We-you-hickey, Prrt-you, Peet-you,

G imitates
her

with some other phrases. With the first phrase, Greenie immediately ^{it}

repeated in a very soft tone, as if talking to himself, that could not have been audible more than 10 feet or so away. The effect was indescribably human, exactly as if a human mother had called to her offspring some distance away: "Willie come her!" and the youngster

Very human
actions.

had repeated under his breath: "Willie, come here". To make the effect still more comic, Greenie remained silent, gobbling worms as fast as he could, and Brownie flew into the tree over our heads and continued calling, whereupon Greenie dropped to the ground and commenced

gathering fibres industriously and hurried off to the nest without making any reply whatsoever. Evidently Brownie "wears the pants" in this family, a fact which I have long suspected.

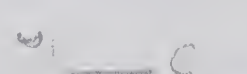
As Greenie had eaten practically all of the worms before being taken to task for loafing, I left to record this observation before it got cold and also to avoid disappointing Brownie when she found came to me, as she inevitably would. As I left, she continued her song. Each birds as it takes material to the nest, now remains quietly sitting in it for some time.

(There must be hawks about as the quail all morning have been scattered about up in the trees, not usual at this time of day.

Temp. 60.)

Nest well built. 11:07. The birds being absent digging in the berry-patch, I took the opportunity of examining the nest. I get the impression that it is the best built of the lot and has the deepest cup. Certainly it is not inferior to any of the others and is more compact than some of them, if not all of them. It is not the result of the idle carrying about of sticks. I should say that it is ready for eggs, if that is what it is intended for.

12:07. Just before noon Greenie was sub-singing near the oval lawn. I went out and gave him worms. This act could not be seen from the nest, but Brownie called loudly from that direction:

G.  C.  (I.e. middle C) at times.
Ter-wheet, ter-wheet-----cha-taw, with other phrases.

Greenie appeared to listen, but did not answer at first, though he did after the third or fourth call. This time there was no imitation. Brownie's calling and singing could be heard from constantly changing directions and getting nearer. I looked her up and found she was headed towards us. Greenie left for the nest and Brownie flew up to my hand as I stood normally. The last worm she carried toward the nest and disappeared. When I got there, Greenie was just enter-

Actions now resemble those during nesting period. ing the nest and Brownie was on the ground beneath, but without the worm in her bill. This worm she had "crimped" while standing on my hand, an action which I have not seen performed except when the worm was intended for a very young nestling that needed to have its food treated in this way. (See earlier notes). The actions of these birds are now resembling more and more those which have previously been witnessed in connection with serious brood-rearing operations.

Nest finished? Thrashers loaf. At 3 P.M. there were no thrashers in the vicinity of the nest, nor were they in the glade. ~~after~~ ^A few minutes, calling brought a scrip from the south-east and Brownie shortly appeared. When she had eaten she did not pick up nesting material, but immediately went down into the chaparral on the south bank. I went there to see what the attraction might be, but she was merely wandering aimlessly about. I left her and returned to the glade. In a few minutes Greenie came for worms, picked up a fibre at my feet and then dropped it. Brownie returned after several minutes, had ^{one} more worm, then she and Greenie joined forces and dug a little way behind me. This looks as if they might consider the nest completed. This is approximately 20 days since the first work was actually commenced at this site, although there was aimless carrying of nesting material much earlier

B sleeps in nest. 6:06. No further observations until 6 o'clock, at which time Brownie was snug in the nest and Greenie was at his accustomed roost. This is pretty soft for Brownie. They should build one for Greenie also. Greenie knows all about the house, has been in it many times now. Yet I suppose force of habit, if nothing else, will make him stick in the other tree.

October 10th.

At 7:45 A.M. the thrashers could not be found any place. I called repeatedly in all directions without eliciting response of any kind. Finally top notes of thrasher song could be heard off to the east, I should say about 250 yards from the glade, over at Robinson's

place. There is open country in between, so that a watcher can follow all of the movements of birds between the two places. I called many times, but got no answer. (The birds have come to my call from that place numerous times). I went down to my entrance and a thrasher (They may have been there all the time) darted out of the bushes behind me and back in again. Then talking

Birds
Indifferent
to me.

could be heard in the chaparral bank close to me. Calling did not induce them to come out. After a time I saw two of the thrashers looking through the fence at me not more than 6 feet away, but not interested in me enough to come to me. I went into the glade and sat down.

New feeding
behavior.

At last Brownie and Greenie came in side by side, went directly to the soft-food dish and ate at the same time. (Greenie's superciliary stripe is wider, shorter, lighter and more prominent).

They continued to eat, with heads close together, talking at the same time. I have not seen them eat ^{out} of the same dish in this chummy fashion previously. Finally they came to me one at a time for worms,

Birds
preoccupied
and excited.

but were plainly preoccupied about other matters and rather excited. Their interest was in each other and not in me. After this they retired into the bushes and moved about talking. There were no signs building

Looks like
serious intentions.

of ~~nesting~~ activities. All of this unusual behavior at this time seems to indicate that the present nest is not the result of a mere reflex, but that the birds' present intention is to attempt rearing a brood, even at this late date.

At 9:30 I went to the nest, finding Brownie in it. I spoke to her and she looked down over the rim at me, said something, then talked at me in pantomime, stood up in the nest, examined its interior, settled again. Two birds were then heard. I looked for the other and saw Greenie in the house. He moved over to the nest and the two birds nibbled at each other's bills, talking in a queer way which I can only liken to the sound made by certain ducks when feeding--not quacking--but a sort of queer, queer, queer. G took B's place, but both soon left. As soon as I had made this note I

Duck-like
talk.

went out again. I heard continuous conversation in an oak seldom visited by these birds, and approached carefully. They were sitting a few feet apart about 15 feet from the ground preening. When they saw me Brownie immediately began working her way down to me from branch to branch, although I had not invited her, and when she was within reach, I held out the worm box. She came down the main trunk, gripped a corrugation of the bark with one foot and the box with the other, looking like a heraldic eagle, rampant. Greenie came to my feet. Yet a short time ago they ^{were} nearly indifferent to my offerings, now they came on their own initiative, still full of talk. As I wished to observe them further, I had to get more worms. On my return at 9:50, they were 50 yards from this tree, sitting together on the eastern boundary fence. From there they went up into a small

oak outside and I went out on the side-walk to watch them. They were talking in fluting tones and using thrush-like trills and much interested in each other. However, when I offered worms, they came down

and ran across the side-walk to me, still with this new talk, which, opening bills.

I noticed, requires them to open their bills fairly wide and close it with each syllable. This is unusual, except in full song.

After these months of observation, recording everything that seemed pertinent, there is scarcely a day passing without some new call, talk, song or behavior being observed.

10:40. At 10:20 they two birds were foraging near the nest. Greenie went up to it first, closely followed by Brownie. They passed through the house on the way. B sat in the nest and G on it. They billed. G retired to the house and preened in it. They continued talking, then G flew to the old oak and called loudly :

G sits in house.

G, 2
C, 2 ———— You're-a-khweet, You're-a-khweet. Pit-youri.

Brownie immediately left the nest and joined him, both sitting close together on a dead limb for some minutes. After that there was some

singing by Greenie, with phrases interpolated by his mate, then both dived into the glade.

12:50. No observations since last entry. I just went to the nest--no birds there. Went to the glade, Brownie immediately running out and jumping to my knee repeating an uncatchable phrase which no amount of talking would induce her to change. While she ate worms, Greenie perched somewhere to the west close by, sang full song. B occasionally turned her head as if to see whether it contained any message.

G. full
song.

Wandering
about.

New bath
procedure.

At 1:10 both were outside the window where I was having lunch--an unusual although not unprecedented place for them. They bathed, one after the other, in the small bath pool under a rhododendron--again unusual as to place, but unprecedented as to successive bathing. All this seems to show that the nest is finished and they have time to go unaccustomed places until the next step, (possibly eggs?)

This roving disposition, and the fact that a north wind has sprung up and is sweeping by the nest, make conditions unfavorable for Dr. Miller to observe them this afternoon.

Behavior towards
cigarettes. 2:55. I have watched the thrashers from 2:20 to 2:50. Neither at the nest nor in the glade, but Brownie soon came to me in the latter place. When she had finished all the worms I would allow her to have, she saw the cigarette in my left hand hanging down by my side and dropped down from my knee to get it, but I forestalled her. (These birds will occasionally pick up lighted cigarettes. A little whiff of smoke from one usually makes them shake their heads and, sometimes say pip).

Loud call from
low perch. When finished she retired to one of her favorite branches about a foot above the ground about 8 feet in front of me and called (It is not usual to call loudly from low perches) loudly using phrases from her full song. Evidently this was for Greenie, for he soon came in from the east, announcing his arrival by a soft pit-yurki, but not going to her. Instead he ate soft food, then came to me for worms, of which but few were left. When he had

G pulls
finger.

taken the last one he reached down under the box and pulled one of my fingers, then began pecking about the ground and talking with his mate, who was now digging a deep hole under an old man. Greenie's phrases (such as I could catch) were new and consisted largely of something like this :

G's new talk.

Chink-oo-whint, Chinko-whint, Cheeko.

False alarm

He repeatedly picked up and dug up soap-root fibres only to drop them again. Brownie paused to listen (the jays were calling) and suddenly bolted in the direction of the nest, followed by Greenie, but when I got there, there were no signs of either.

G recovers

worm from B.

At 3:50, in order to keep in touch with the birds so that they might not wander off (although it may have the opposite effect!) I squatted on the ground in the glade. Both came at once. I fed them both with one hand. Brownie showed some disposition to poach, at one time taking a worm intended for Greenie, which he at once took away from her without causing any disturbance. I studied both birds carefully. They were both at ease and, I think, were holding their feathers about the same. My impressions were:

External appear-
ances compared.

Brownie is the larger bird. Her bill is longer, heavier and slightly more hooked. Her superciliary stripe is longer, but I think it is changing.

Greenie is more slender and looks like a young bird, in form, about 3 months old.

G's talk.

He kept repeating:

Ching-goo , a slight variation on his talk a few minutes ago.

Dr. Miller's
visit.

7:40 P.M. Dr. Alden Miller got here about 4:45. The thrashers had just been in the glade a few minutes before, where I had been trying to hold their attention to keep them from straying (by talking to them and avoiding feeding them) but when we went in, they had gone.

Thrashers
shy.

and no amount of calling brought response of any kind. At this time of
(also court when nesting)
day they are wont to stray anyway, and are not responsive--usually.
even
However, this is not a safe generalization, for they may show up
any time, any place, before dark. After a considerable time had
elapsed they were seen in the berry patch and Brownie did condescend
to come out, jump up into my hand held near the ground and take a
worm, but she had no special interest in doing it.

B sleeps in
nest.

I ventured to predict that, after dark, Brownie would be found
stated
in the nest and Greenie at his accustomed roost, but that Brownie
had been seen using the nest the last two nights only. The prediction
fortunately proved correct and we saw them snugly ensconced in their
resting places.

Yesterday work on the nest faded out. Today no work was seen
being done on it, and Greenie was the only one seen to have any marked
interest in nesting material, although Brownie did pick up a fibre
or two once in a casual sort of way. Neither, however, carried out
the impulse to any effective conclusion.

This was a day of little observed activity, no sustained under-
song, but lots of talk.

October 11th.

Early song not
heard.

Early morning song was not heard.

About 8 I stood across the road from the glade, having just
noted that neither bird was in the nest. Both thrashers came out,
sat on the opposite bank talking and looking at me solemnly. Only
Brownie would venture across. possibly because there was a third
person (Julio) standing near. I went into the glade and both came
immediately, talkative and hungry. Greenie picked up soap-root
after eating and I applied to him the same test previously given
Brownie, with the same result. Greenie brought his cargo with him
and threw it away with a side flick only after he had seen the worm.
Brownie went to the nest and sat in it. Greenie climbed the old oak

G. tested.

3.

calls
loudly.

called loudly with musical phrases for perhaps a minute. I went to the nest, noting the end of Brownie's tail sticking out of it. She soon joined her mate, talked, and then both dived into the glade. I came in and made this memorandum. While singing Greenie kept his bill open between phrases. I did not look for eggs, but there were none yesterday. Based on precedent, I feel justified in assuming that, if there is no bird on the nest for several minutes, there is no egg in it. However, presence or absence of eggs will be recorded only as determined by actual observation.

Keeps bill open between phrases. I did not look for eggs, but there were none yesterday. Based on precedent, I feel justified in assuming that, if there is no bird on the nest for several minutes, there is no egg in it. However, presence or absence of eggs will be recorded only as determined by actual observation.

No eggs.

B changes
word for
worm.

Nest building
resumed.

Behavior at
nest.

B. occupies
house for
24 minutes.

B. puzzled
by my immova-
bility?

10:10 A.M. At 9:45 both birds came from the vicinity of the nest to the glade. I had just inspected the nest and found nothing in it as Brownie left it. Both birds were exceedingly friendly and talkative, B on my knee and G beside me on the ground. Neither interfered with worms handed the other. Brownie gave me an entirely new word for worm, so I suppose the thrasher language is in code with a different key-word each day! They both began to pick up fibres and carried them to the nest (perhaps not knowing that I had announced its official completion). Greenie arrived first and arranged his sheaf suitably in the nest. Brownie sat on the edge and watched him, but I could not see whether she had brought her material all the way or not. After Greenie had finished work he sat there for 5 minutes quietly more, Brownie keeping her place and looking down on him. (These intervals are timed to the nearest minute). Greenie came out and entered the house, Brownie taking his place in the nest. Greenie sat in the house, much to my delight, for exactly 24 minutes, when, in response to a scarcely audible call from Brownie, he went over to the nest and sat looking at her. This call was the first sound made by either bird during the 24 minute period. They both entered the house, stayed a few moments and then left, but Brownie was back in about a half minute, seemingly for the purpose of determining whether I was something real or otherwise, since I had remained motionless during all this time (except for looking at my watch), also had said nothing,

and this behavior on my part, if the birds have kept notes on me, would undoubtedly be found in them under the heading of Unusual Behavior of the Commissary Department. After taking a good look at me, Brownie left for the old oak to sing. The nest was empty, so I came in to enter this record and straighten out the kinks in my neck, for I had been standing almost directly under Greenie (4 feet over my head) looking up at him. From this position I could also see the nest well. It is not necessary to keep quiet with these birds, but, on this occasion, it seemed desirable.

This renewal of nesting activity may have been due to the stimulus of food.

Resumed nesting 11:08. That was another bad guess, apparently. A short visit apparently not due to food at the nest disclosed both birds gathering material, carrying it up stimulus.

and placing it. Some of it looked suspiciously like pine-needles

Pine-need- from where I stood, but I was not very close. If it was, it is the first noted. About noon--no pine-needles in nest, I think.

2:00 P.M. For some time before and after 12, perhaps an hour altogether, the thrashers were not seen.

B. in nest. At 1:30 I went to the nest, finding Brownie sitting in it placidly. G. comes andly. After a few minutes Greenie came with one almost invisible shapes it.

soap root fibre, Brownie left and Greenie began a process of shaping and forming with his breast, then settled as if for a long stay.

Cut(?) feather in B's wing. I went to the glade and Brownie came for worms. There is a flight feather on one of her wings twisted about its principal axis so that the plane of the vane is approximately at right angles to its normal position. The edge thus exposed looks as if it had been cut with a pair of scissors parallel to the shaft. It is not frayed: the barbs appeared to have been sheared off, as their ends are blunt.

Something bites Greenie. Greenie soon came also and just as he was learning Brownie's

act of sitting on my knee and having worms handed to him, he suddenly jumped up into the air about 2 feet with a squeak, landed at my feet

and began probing frantically all over himself with his bill. This is not new. He looked at the ground suspiciously, at his feet, at me, and, as well as he could, at himself, evidently in a state of great suspense waiting for the next stab and apparently trying to analyze the situation in order to predetermine its position on his own topog-

Another stabraphy. When it came, up he went into the air again, followed by more frantic probing and another period of suspense during which he froze, with back and neck horizontal staring into vacancy. Brownie had been singing a fine undersong during this time, a few feet away in the brush. I repeatedly heard the hen and the thrush, although an air

B. sub-sings. compressor and air tools which have just started work on the foundation for a house a couple of hundred yards away, drown out nearly all other sounds. Brownie came out and had an attack just like Greenie's.

B. "acts here".

It clearly is something biting them and I wonder if it is "The"

"The" fly? fly. Whatever it is seems to carry a good punch.

(Temp. 65).

B in nest. At 2:45 Brownie was in the nest and Greenie in the glade singing G singing.

undersong ranging from $\frac{1}{2}$ to $\frac{1}{4}$, in the bushes. He finally came out

"Training" Greenie. to dig in front of me and sing happily. I gave him worms provided he would jump up on to my ankle or knee for them. This he did readily,

Force of habit.

but the force of habit is so strong that he would look for them first on the ground. Even when I hold my hand low where he can reach into it from the ground, he often looks on the ground under it first.

G gathers fibre.

This period ended by his gathering up especially long fibres and disappearing with them in the direction of the nest.

Unusually high-pitched song.

About 4:45 an exceedingly high-pitched thrasher full song of short duration was heard in the direction of the glade. But for its rhythm and phrasing it would have been scarcely recognizable as coming from that bird. I went to the glade, both birds appeared almost simultaneously and began talking, both keyed to that same high pitch. I was able to effect absolute equality in the distribution

of worms due to Brownie's increasing forbearance and her mate's decreasing inferiority complex.

Roosting 6:00 P.M. At 5:55 Brownie went up to her nest and Greenie was settling on his perch, but still moving his head about to see where the various rustlings came from. Although he approves of the house, as shown today, he apparently has no present intention of occupying it at night.

Why sleep apart?

One wonders why these birds sleep apart: whether it is to avoid both being wiped out by a marauder at the same time, or whether one of them snores.

B sleeps in nest, not on it.

Perhaps it should be made clear that Brownie sleeps in the nest, not on or near it. When it became evident that the venture was to be a serious one (as far as building was concerned) I wondered how fouling was to be avoided if Brownie persisted in occupying her customary perch directly over it. The problem has been simply solved.

Solution of fouling problem

October 12th.

No early song. No early singing heard.

8:20 A.M. I did not see the birds at any of their accustomed haunts, but, after several minutes of intermittent calling and listening, they came creeping silently out of the chaparral almost at my feet. When I entered the glade and sat down they came to me at once, full of

G tries to pull my hand lower.

talk. As Brownie was on my knee, Greenie would not come up, so I held one hand where he could reach it from the ground. He hooked his bill over my fingers and tried to pull my hand lower, and when this did not work, he took the end of a finger in his mouth and bore down hard. As this was not satisfactory, he jumped to the chair beside me and everything worked out properly.

Moulting not completed.

9:40. From a practical point of view the meal worms serve a very useful purpose, in that they enable me to observe the birds at close range, be sure of my identifications, etc.

I noticed something white showing on Brownie's right wing, so

invited her to "come up", which she did without hesitation, Greenie, incidentally, running over to see if it meant more worms for him.

Flight feather - The white object proved to be the sheath peeling off of a new feather, which is about 2 inches long. Next to it is another new feather a little longer. I got her to come still closer, in my lap, so I could look at the other wing where a feather appeared to have been cut longitudinally as recorded in these notes. She permitted me to push it a little to one side with a finger-nail revealing the neighboring feather with something not quite right about it, but what, I could not find out, because, just at that juncture there was an uproar behind us, Brownie straightened up to look and bolted. What she had seen was a huge steam shovel being hauled by a truck and followed by three more trucks all in close formation apparently headed directly for us (on account of the curve in the street at this point) and this was too much for her. The whole landscape appeared to be approaching and roaring. Greenie fled also, but not until I had had plenty of opportunity to note that there appeared to be nothing abnormal about his wings.

Backward in many things. Greenie began his moult later than Brownie. It is curious, but in many voluntary acts, perhaps the majority of them, he seems to be behind Brownie in time. A notable exception is his throwing up the job of incubation at the first nest long before Brownie had lost hope.

12:30. I had not seen the birds for some time, so went in search of them without calling. They were not at the nest or in the glade.

As I went through the orchard a soft call sounded behind me, so I sat on a wall and awaited developments. Brownie and her mate came out from under an Escallonia and began digging in the cracks of the wall 5 or 6 feet away, then to me for worms. After this they went directly

Shaping nest to the nest and one of them spent several minutes in it shaping it.

2:08. I did not look them up again until 1:30, at which time I could hear undersong near the oval lawn. I went there and watched

There were no eggs in the nest early this P.M.

SEXES are DETERMINED

5:50. Here is where we start all over again--Brownie is the male and Greenie is the female. I shall now have to turn my mind inside out. A lot of things that were obscure are now plain and vice versa.

This is the approximate time of day when most of the courting is done. The birds were near the berry patch where they are frequently to be seen at this time of day, which is also the time when they are

most indifferent to me. I had the birds well marked and, although they were about 20 feet from me, I could check all points of difference except the only permanent one--the eye color--but fortunately that was not necessary, as Brownie's two wing imperfections were unmistakable. Greenie suddenly crouched, raised her tail and head and began to call in a low voice. Brownie who was sitting on the small lath house about 8 feet from me immediately flew down, mounted Greenie and definitely carried the act of copulation to completion.

Three times before in the past months I have witnessed this and had an uneasy feeling each time that I had the sexes transposed, but this is the first time that there can be no doubt. I called the birds, watching Greenie exclusively without losing sight of her at all. She came to me and got worms, then Brownie came. Thus before, during and after the act I had the birds identified at all times.

This is somewhat of a shock. "It is hard to change the old skin". All the pronouns above the line of sexes as applied to these birds, with perhaps an exception or two in the beginning are wrong.

A little
clearing up.

Without attempting to go back over the whole chain of events at this particular time, it appears that this discovery clears up certain puzzling features off-hand. The egg-laying observation was defective, either as to the bird seen at the time, or as to the fact of ^{any} eggs being laid at that moment. The difference in eye color is more in harmony with what would naturally be expected, viz: Granted that a difference exists (and of this there is no question), the eyes of the male have the more colorful and brilliant irides. Then it appears that the young all have the same colored iris as the female. It explains why Brownie wears the pants (p:450); why Greenie defects to him, is more shy, smaller, etc. I never was quite reconciled to the female being larger and heavier and more aggressive, but I could not get over the egg-laying mal-observation.

It is clear that the discovery of the true sexes reveals the

male (not to overstate the matter) as in no way shirking his share of all labor in connection with rearing a brood, from the placing of the first twig to the final driving off of the young. (What about his grabbing the new nest to sleep in?)

Up to date, the notes show, in the matter of song that he has shown greater fertility in mimicry. As to the rest--it will be necessary to go back and check up. However, it is only fair to say that I have been several times during the past few days, on the point of recording my opinion that the ^{then} supposed female (Brownie) was the better singer of the two. Believing that Brownie was the female, I hesitated through what, in retrospect, now appears to ^{have been} ~~be~~ excess of caution.

However, I will not commit myself on this point as yet.

Nest now seen
as part of
reproductive
programme.

The act of copulation makes it appear as if the present nest were intended to be a part of a reproductive programme and that the reproductive organs of the pair are in proper condition to bring about a successful result. (I do not know whether this is biologically sound or not).

It should have been noted that after Greenie came to me following copulation, she looked up into the nest tree as if about to go up in it--an unusual action for this bird at roosting time.

October 13th.

+

No early song.

No early morning singing was heard.

G. on nest.

At 8:00 A.M. Greenie was sitting quietly in the nest. Her identity was indirectly verified by getting Brownie to come to me in the glade.

B. sings.

After eating, Brownie went to the top of the old oak and sang intermittently for a long time. Dr. Reynolds called me down to the street to watch the evolutions of two flickers, apparently courting. At

G. still

on nest.

8:16 Greenie was still in the nest and Brownie was on its edge, reaching over occasionally to touch Greenie on the bill. We left them thus occupied. In a few minutes, Brownie reappeared at the old oak and sang. About 8:35 two birds dived down from the tree and it was

thought they might be the two thrashers, so this was a good time to have a look in the nest. We went there, but there was a thrasher in it facing now in the opposite direction. I placed a ladder and reached up until I located the bird's bill, then fumbled about underneath and found one egg. The bird was not identified, but it was Greenie, of course, that laid the egg.

(Evidently the birds do not know that this is Friday the 13th.!)

Thrasher nest 5. This is nest No. 5 for the thrashers and nest No. 47 of all kinds. (It is their 13th. egg this year, 13th. kinds for the year to date. (month they have been seen together, but (they chose a branch on which a horse-shoe had hung for months!) 10:18. The birds seem to have begun regular shifts. Until

10:15 there was a bird on the nest whenever I went there. A little

Bird in nest calls. before that time the bird in the nest called:

Weet, weet, Cha taw

twice, with a few warbling phrases preceding and following. As there

It leaves. was no response, it left and climbed to the top of the old oak and called loudly, beginning with three distinct flicker calls:

Calls from old oak. Yay-cup , yay-cup, yay-cup,

Greenie following this with song. This was Brownie, because in slightly less than 2 minutes, while B was still singing, G came and covered the eggs.

B leaves nest 10:45 There was a bird on the nest at 10:35. In the glade I found Greenie, hungry and getting still tamer. B. did not wait for

his mate's return, but suddenly appeared in the glade without having

But G called for relief. Greenie then returned to the nest promptly. (Verified by going there). The birds are leaving the eggs uncovered longer than noted with the other nests. Possibly this is the practice in the earliest stage of incubation.

Both at nest. 10:55. One in the nest and one on it. The one in talking in pantomime with widely opened bill, the other occasionally leaning forward and touching it gently.

11:55. I have been working near the nest for the last half hour,

G, off duty, calls. during which time Brownie was in the nest. Shortly before 11:55 Greenie in the glade, where I had given him ^{her} a Jerusalem cricket uncovered by my operations about 10 minutes before, began calling scrip.

B. leaves nest, G takes. Brownie stirred uneasily in the nest, the scrip approached, and B left for the old oak a few seconds before G took over. G had not sung while off duty, but B began immediately after reaching the old oak. This seems to correspond with what Mr. Brock says is the habit of the male while the female is incubating. My recollection, however, is that he stated that he was unaware of the male's participation in that operation.

B, off duty, sings. G in nest ans'rs. At 12:03 Brownie was singing loudly in the old oak. About 12:05 Greenie in the nest answered; full voiced:

Pit-che-chee, chairk

Pit-che-chee, chairk

Beaver!

Fast

They change. In a minute or two Brownie came via the glass house, they met inside it

G not singing when off. and B was in the nest at 12:07. G did not sing after she left. (12:14)

Boldness of wren. fishing the soft-food supply in the dish in the glade. A Bewick Wren

came out cautiously and ate out of the dish about 4 inches from my hand and almost underneath me. I went to fill the bath dish with water and on my return the wren sat on the food dish 18 inches from my knee and ate its fill without visible fear. Its feet and legs are a highly polished black.

Continuous incubation. 4:45. Since the last record above the birds have been incubating diligently whenever the nest was visited. Change of shift was witnessed many times and the nest has not been seen uncovered for more than a few seconds at a time since the first change was noted.

G rather silent. B sings. Greenie has been rather silent. Brownie has sung once or twice loudly and once a long half-song in the glade of very good quality.

Rapid changes of shift. 6:45 P.M. At 5:29½ the birds changed shifts. I was curious to

see where Brownie would spend the night in the event of Greenie's taking the night shift. In the next 14 minutes they changed shifts six times and I was hard put to it keep track of the two birds, in fact was unable to tell which was which, until on the 6th. change Brownie came to me as Greenie went to the nest. The 7th change occurred at 5:40, when Brownie went on duty and Greenie went up into her (now) tree, from which Spotted Towhees were driven out. It was now dark inside the trees and I had no flash light, but I could see B's tail against the sky, projecting from the nest. This seemed

B in nest. to indicate that B would occupy the nest for the night, and G the usual tree. I heard rustlings in the lower branches of B's tree (these branches hang clear to the ground on the south side) and went in to see what other birds were roosting there, when there was a sudden movement, a loud scrip, followed by a queelick almost in my face. B was still in the nest, so this seemed to indicate that G either intended to take B's place in the nest or roost in the same tree.

G not located. I got a flash-light and could not find Greenie in either tree, nor was she in the house.

Alarm calls. Incidentally it appears that scrip and queelick may be used as alarm calls at times.

G(?) still not located. 7:50. P.M. The bird in the nest does not appear to have moved since last observed. The other could not be found in either tree or in the house. It may be in the nest also, but this could not be determined from the ground.

Copulation. I omitted to record that the birds copulated while the sixth change was in progress.

October 14th.

No early morning song was heard.

At 8:15 Greenie was in the nest, Brownie in the glade. The latter after taking but 4 worms, climbed the old oak and sang full song for 30 minutes, sitting perhaps 50 feet from the nest. The song was not continuous during this period. It was harsher than I have heard from this bird before, and it was changed frequently. Toward the end I imagined that the bird became hoarse--if such a thing is possible. (8:50. The song continues).

Answers from nest.

After 25 minutes Greenie answered from the nest softly once.

G calls.

B continued, then G called loudly perfect, perfect, just as B changed his song to one containing the phrase yer-r-r-kit, yer-r-r-kit, strongly

B goes to G. They talk.

trilled. B went to the nest and sat on the edge, both talking

No shift.

silently. They did not change, but B went to the glade where I fol-

B excited.

lowed. He was much excited, as shown by his rapid movements. His pupils were expanded giving him a wild appearance. He came to me

New behavior.

for one worm at a time, flying part of the distance and taking off with a hard push each time to run through the bushes. Clearly much excited. (9:07--still singing loudly). I do not know whether the

An egg?

excitement is because an egg was laid or because none was.

At 9:15 singing abruptly ceased. I sent Julio out to have a

Singing stops.

look and he said G was in the glade. I went out a few minutes later

G dumpy off duty, indifferent to worms.

and verified this. Greenie looked dumpy, would not come for worms,

and even worms tossed to her, she would turn over with her bill and

eat only in a perfunctory way.. I went to the nest, finding B there.

B, on nest pecks me.

He protested silently at my meddling about the nest and pecked me.

Grips lining

He sat ~~so~~ tight and gripped the lining with his feet so I retreated

Ungentle

temporarily. He does not seem to be so gentle as formerly.

G recovers spirits.

At 10 Greenie was no longer in the dumps and ran up to me for

worms in the glade as soon as she saw me. The last one she took to the nest. B left when she was 2 or 3 feet away and the worm was seen

as she stepped in, but I could not see whether she followed the previously noted pattern of "showing it to the eggs", as with earlier nests. (Without looking up back notes, my present recollection is that this action was seen principally, if not solely, about when the eggs were due to hatch, though this may not be correct. However, it has been frequently noted that the oncoming shift carries a worm to the outgoing one and that change is frequently brought about by feeding the bird off duty).

10:35. Greenie in nest, B at top of old ^{oak} called after a few preliminary soft warbles:

calls


You-wheet-you , you -wheet-you; Tork-queellya, tork-queellya , eepeeep

answers
from nest.
B's

G answered loudly: Tork-queelya , twice in the very same key and
(from the nest)
quality of tone. B then proceeded to sing, using entirely different phrases than heard earlier, and less harsh.

B use same
phrase and
pitch.

This again illustrates the tendency of these birds to answer calls with like phrases. Incidentally it also shows that both birds know and use the same phrases, as previously noted.

B's earlier
phrases.

In his earlier songs this morning, some of B's phrases were:


Purr-pur-ree, cha-taw; peet-byou-ick, cha-taw; gur-r-r-kit (3x)

Rapidly

B objects to
handling, but
permits it.

At 11 o'clock I decided that, whether Brownie on the nest, liked it or not, I would see if there were two eggs. He again set very tight and protested soundlessly while I clasped his body in one hand, fingers on one side, thumb on the other and felt around with my fingers. There were two eggs. I smoothed down the feathers I had displaced and as I drew my hand away, B took hold of a finger and held on to it for a moment, then released it.

2 eggs.
B holds
finger.

The excitement this morning, and the singing, were undoubtedly connected with the egg-laying. This fits into a clear pattern.

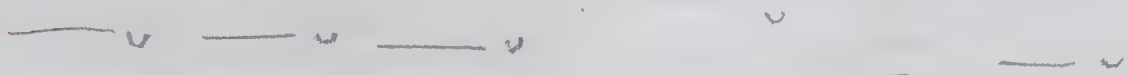
B plays the
xylophone.

At 1:20 three-quarter song was heard near the oval lawn, in which the bell and xylophone motives were prominent. I went out

of pep. to investigate, and before I could get the worm-box out, Brownie came running and flying across the lawn and the road (a space that these birds are reluctant to cross) and jumped up, full of pep, to my ankle, going off again, when she had finished, like a whirlwind.

No further observations until 5:15, at which time Brownie came to me in the glade, Greenie being in the nest. After 6 worms, Brownie left for the nest.

5:20 P.M. The following loud, clear call sounded from the direction of the nest:

A loud call. 
Purnty, purnty, purnty; clip-ter-aah; cleeah

Author unknown. I decided to leave them entirely to their own devices until after dark, so that the one off duty may seek its own roost without possibility of being disturbed.

B not in her
regular tree.

8:05 P.M. This made no difference. I could find nothing in Greenie's tree but a Spotted Towhee. As Greenie chases these birds out of the tree, it looks as if she were elsewhere. Possibly on the nest, although only one bird can be seen there, and even that is not easy to see.

October 15 th.

8:49 A.M. The thrashers have set a warm pace for me. Shortly before 8 I went to the nest; Greenie was in it. I went to the glade and in a few minutes Brownie came, and, after eating, went up into the old oak and sang. These are some of the phrases:

B sings.

Peet-byouick pe-chee-cup, peet-you, terra-tseep, eat-you, berra-che-chip

At 8:20 Greenie left the nest and I had a look before B appeared--still 2 eggs. B came at once, paying no attention to me.

is singing full-song indistinguishable from B's. Greenie climbed the old oak and sang full song exactly like Brownie in every respect. I am satisfied that only detailed analysis of

an actual graphic record from a sound recording apparatus could show any difference in quality. Even the phrase berra-che-cup, a new one just used by Brownie, also appeared in Greenie's song. There was no confusion of the two birds with each other. It will be noted that this behavior of an egg-laying female does not fit in with the ordinarily accepted pattern for these birds.

G well wound up. While B was still in the nest, G came back into the same tree oak and again sang full-song, then returned to the old and scripped.

Things get mixed. quick changes.

8:25. B in nest called purrty 3 times.
 8:27 G entered nest saying berra-cⁿe-cup softly.
 8:27 $\frac{1}{2}$ G came out
 8:28 $\frac{1}{2}$ I went up on platform near nest.
 8:29 B came back into nest.
 8:29 $\frac{1}{2}$ G again singing full-song in old oak, B in nest answering softly.
 8:30 $\frac{1}{2}$ After short silent interval, G resumes song with same motive.
 (Another thrasher is singing far off to the N.W.)
 8:33 G dives out of tree.
 8:35 B comes to me in glade--I had expected G.
 8:37 I go to nest, G is there.
 8:38 G leaves nest as B calls from old oak.
 8:38 $\frac{1}{2}$ I hear both in old oak as I stand at nest. 2 eggs still.
 8:39 B enters nest and answer G in the old oak..
 8:40 A quiet period for 5 minutes and I leave, noting B preening in the old oak and G in the nest at 8:45.

The times are as noted by watch. Probably there is no error of more than a half minute. Where half minutes are recorded, error is not more than $\frac{1}{4}$ min.

10:00 I am just going out to observe again. There has been frequent singing in the mean time.

11:55. At 10:05. Greenie in the nest. I try to feel under her, but she sits like a rock and is frightened, so I decide to wait for the change of shift, and it was a good long one. There was not a sign of Brownie until 11:45. At that time I saw him approaching the nest from under a small pine. G spotted him almost at the same time and called loudly from the nest:

Yur-kit Pit-yurkit Cleecleeclee and dived out of the

nest, headed for the glade. I went up to the platform to beat Brownie to the nest, winning by a hair. There were three eggs.

B sat calmly on the nest until I withdrew my hand, then popped in.

The 3rd. egg. **excited.** G scripped loudly from the glade so I went there and she came immediately to me still scripping excitedly. I listened as closely as I could and the nearest I can get to the call is :

khrick! (No ee as in Hoffman)

observed
G's shift on the nest was 1 hour and 40 minutes long. I do not know how much longer the actual time was, as I did not see her go on. During this shift she occasionally changed position. From previous records here, 3 eggs should constitute a set. (Temp.70)

This was a long shift. Brownie said nothing at all, either in approaching or in taking over.

12:30. When I went out at 12:15 Brownie was off, Greenie was in. Under the stimulus of worms, B went up into the house and waited for Greenie to come off, which she did, going through the house, Brownie taking over. As B climbed the tree one of the birds called loudly in rich musical phrases that I could not catch.

G takes worm to nest. 1:12. At 12:44 Greenie came to me where I sat under the tree and jumped up on to the box which I was using as a desk, took one worm and carried it up to the nest. B left just an instant before.

B takes up worm. At 1:09. The same thing was repeated by Brownie, except that the two birds met in the house and B gave G the worm. (Temp.74)

An easy job. Not very difficult bird-watching this! Sitting comfortably in a chair, on the crest of a ridge, in the shade of an oak, temperature 74 degrees F., a barely perceptible breeze, at ones own home, the nest in convenient range, and the birds reporting in person at the "desk", and occasionally singing. No crawling, buzzing or biting insects.

Regular
shifts.

7:20 P.M.

Regular shifts were maintained during the afternoon with nothing special to note until about 5:30

rebukes(?)
G for leaving
nest.

About 5:30 I sat in the glade; there was a loud burst of song at the nest. Soon Brownie came and was about to get a worm, when Greenie scripped, having followed from the nest apparently. Brownie immediately ran off full speed, there was a haih in the bushes, a few pit-yurkis and peet-byouicks and I hurried to the nest, but Brownie and Greenie were both headed for it too. B stopped and G went up into it. It seemed to me that G had left when she should not have done so and that B went to remonstrate and persuaded her to return. This, of course, may not be the true explanation.

G's change of
roost located.

About 5:45 they changed shifts. Greenie flying towards her tree. I waited quietly. Soon G came back and went to the nest, but B did not come out, neither did G, but a CrownedSparrow and a Brown Towhee did. (Ejected by G?). I waited until about 6, then got a flash light and climbed up very quietly on to the platform, then turned the light on to the nest about 18 inches away. Only one bird, where I had fully expected to find 2! As far as I could see, this bird did not even wink. I do not know which one it was. I stayed there (about the center of the tree, which is a small one) and turned the light in all directions, reducing the aperture of the lens by holding my hand over it and allowing but a small beam to pass, in this way reducing the glare reflected back to me, thereby allowing the pupils of my eyes to expand. When I turned the beam on Room B (See p. 408), there was the other thrasher, all settled and comfortable, absolutely motionless.

G roosts in
nest tree.

Why this change
of habit?

11:13 P.M. The thrasher is still there. (Temp. 52) So now they are both in the same tree. Why this change of habit as soon as the nest is occupied at night? Do they change shifts at night? Is it to make this safer and more convenient? Or is to give additional protection to the nest? Is this an instinctive act or is it an in-

telligent one based on a real understanding the changed conditions?

October 16th.

Little early song. There were a few early morning calls

7:50 A.M. (Temp. 66) Looks as if it would be a rather warm day.

B's full song.

About 7:30 Brownie was calling and singing full-song from the old oak. I stood there watching for several minutes. The theme about which the song was built was the orkit, verkit, erkit and pit-byouic

Answers from nest.

one. Greenie suddenly called from the nest orkit, orkit, orkit and, without waiting for Brownie, flew up beside him. Brownie left at once

continues B's song.

for the nest and Greenie continued the song for a time before dropping down to me for worms. The interesting thing here is, that if

No difference

I had not seen the birds, I would not have had any intimation that the singer had changed, so like were their songs even to the phrases used.

Testing memory of pitch 2 weeks after hearing call.

8:50 A.M. It occurred to me to ^{again} ~~again~~ test my memory of the pitch of Greenie's high peer of Oct. 2nd. (It has not been heard since).

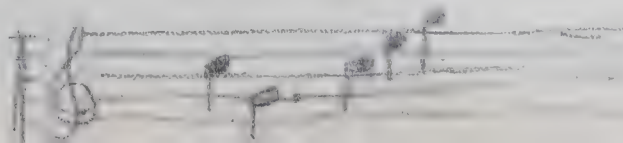
I fixed the sound in my mind then whistled it, then went to the piano and struck C3 (Counting middle C as C1). This was too low. D was too high. C sharp was too low. So roughly I was about $\frac{1}{2}$ tone out, assuming the original identification to be correct.

10:25. A strong north wind is roaring through the pines. (Temp. 78) A steady sound seems to inspire the thrashers to sing. I have had this impression many times. Brownie is sitting in the glade giving many imitations in his under-song. (About $\frac{1}{2}$ song). G is in the nest apparently not disturbed.

12:45. (Temp. 86) "I never, etc...." Just returned from town. Despite the noise of the wind in the trees I could hear Brownie's under-song before I entered the glade. He was well wound up, making more inarticulate sounds than usual and more sounds with ells and ens.

From a flute-like phrase which sounded like:

New phrase.



He branched off into the bell and xylophone song with many variation.

Greenie called from the nest: (A new call)

New call.

Yure heep five times in rapid

B takes time in obeying. succession; but B instead of relieving her, came to me for worms. I wobbled my finger in front of his face and, after examining it carefully from different points of view, he reached over and took the tip in his mouth. This was repeated. The third time he left, but was in no hurry to go to the nest.

Both birds singing alternately from nest. 6:00 P.M. About 5:15 both birds sang frequently, one being on the nest. When they changed about it seemed to make little difference. or 15

The songs, though short, say ten seconds or so, were full and rich. As sunset approached, there was an increasing tendency for both ~~birds to be off the nest at the same time.~~

Bill is 3 eggs. birds to be off the nest at the same time. On these occasions the one leaving the nest would join the other in a nearby tree. I took advantage of one of these absences to assure myself that no egg had been laid today. There had been none of the excitement shown this morning that was exhibited in connection with the laying of the

3 pecks me. three eggs. Both birds saw me headed for the nest, but I beat them to it. There were only 3 eggs. Brownie sat on my hand and pecked

Bill is dull. me many times. His bill is duller than those of the young birds and it does not break the skin. I am doubtful whether the bird really tries to do any damage. I then offered B --in the nest-- a worm

Takes worm. he took readily and as many more as I would offer. Finally he climbed out of the nest and sat virtually under my chin, wanting more worms. This is unusual behavior. Without referring to back notes, my recollection is that both adults have always refused worms in the nest, except when there were young present. If this is not strictly true, it is in any case, extremely rare. Usually they freeze. After this they were both off again, but no courting took place. Both returned to the tree together and apparently disposed themselves for

the night about 6. Before this, however, I had again given worms to the occupant of the nest, which I could not identify, as I had always not kept track of them during their frequent changes. (Temp. 74)

Pecking believed to show merely mild displeasure. It should be recorded that when the birds peck me in this way, they make no vocal sound and do not ruffle up their feathers, spread their wings or tails. They either resent this interference more than formerly, or else are now freer in their expression of it.

October 17th.

Morning calls. Miscellaneous early morning calls were heard and short songs, but no sustained efforts.

Calling for change of shift. A shift was made at 7:45 in response to a loud series of musical phrases uttered by Brownie on the nest. It is to be noted that calls from the nest are now no longer a rarity, whereas in previous instances, the bird off duty almost invariably gave the signal for the

Approach call change. Again, the "blue-bird" approach call of the bird approaching the nest is now seldom heard. There is very little of the stereotyped behavior in these birds.

12:30. I have had little opportunity to watch the thrashers this morning. However, about noon, I went to the glade where Brownie was given worms, after which he indulged in a perfect riot of song ranging from quarter to three quarter, with imitations of the thrush, hen, quail, flicker, bell and xylophone. A Green-backed Goldfinch sat about the same distance behind me (about 10 feet) and sang for several minutes almost continuously and simultaneously.

B's mimicry. B's quarter song is not so loud as the song of this particular finch. B came out for a sun-bath and G called loudly from the nest. B hesitated in the middle of his "fit" and listened, then went on the same as before, going to the nest only when he felt like it, but coming to me first. G came directly to the glade when finally relieved.

2:40. First observation since the preceding. Greenie, as later identified, in the nest. While the immediately following notes were taken, I did not ^{know} which bird was in the nest. The behavior is different from that previously observed when there are eggs in the nest.

G's new call from nest.

At 1:58 I was sitting by the nest. Greenie called loudly and in staccato:

Pittick-yer, pittick-yer, pittick-yer---pittick! Nobody came or answered.

Another call. Getting impatient. At 2:15 she called again from the nest:

Yerp, pityee, pityork, york, york, pityee, pityer, pityee, and left the nest, but was back in about a minute, having called again in the meantime.

Calls again. At 2:18¹ she called again from the nest:

Yerp, pityee, yerp, yerp.

Once more.

Fit-it-chee-ee, verrick, twice, strongly accenting the ee.

Approves own call. Leaves nest.

At 2:22¹, in low tones: Tseep-perfect.

At 2:24¹ she left, there still being no signs of the other bird and climbed up the old oak scripping loudly. She was back in the nest again in 3 minutes. 2 minutes after I could see Brownie

B comes

coming quietly. When G saw him she made an inarticulate sound, dived out of the nest, paused by B's side without comment. B said h-a-i-h at her and went to the nest without volunteering any explanation of

G was anxious.

his failure to respond to any of the calls. G, in leaving the nest, was clearly looking for her mate and plainly showed anxiety. This

Longest exposure of eggs.

is the longest time I have seen the eggs exposed in any of the five nests. Perhaps the temperature (88) has something to do with their leaving the eggs uncovered longer.

offer G worm in nest. At 3:25 I went up to the nest. Greenie was in it. I wanted to test her on taking worms while in the nest which was about at the level of my eyes, the platform being too low. As I had the worm about 6 inches from the tip of my nose, the cheeky Brownie, who; I had thought, was nowhere around, calmly gulped it before I even saw anything but the tip of his bill. Greenie left the nest and B stepped in, reaching for more worms before I could get them all the way to him. He sat with his bill open to cool off and I noticed that he left a space between the eggs and his body, contrary to usual custom. Whether this was for his own comfort or for the purpose of regulating the temperature for the eggs, I do not know.

G will not take worms in nest. About 4:30 I tried Greenie, again in the nest, with a worm. She promptly froze. I laid it by her bill. She waited until I had descended, then ate it.

"dances" for me as sole spectator. A little later when she was off duty in the glade, she ran to me, stopped about 4 feet away in front of me, raised her head and tail vertically, spread her wings slightly, crouched, and in that position "danced" a few seconds in a small circle, her head toward the center.

Brownie was not present. This is her invitation to the male, After that she jumped up for worms.

At 5:21 Brownie, on hearing Greenie scripping in the old oak, left, and said softly, twice:

— Cz

B comments on G's calls.

C, Pyor-ráh, keent

Check of recollection of pitch. I checked my recollection of the pitch on the piano when I came in, and it is given above. I then recalled, or thought I did, that I had ~~previously~~ tried to represent a phrase like this in musical notation, so looked back through the notes and found that I had. (See p. 444). The difference is not great, in fact the pitches are identical. It would be interesting to know whether the slight difference is due to personal equation or to a real difference in the call.

Male takes night shift. At 5:45 Brownie came back and took charge. I was interested to see whether Greenie would leave the tree or just shift to her new roost in Room B, same tree. I had to get a flash-light to find out. She was in room B. It appears to date, therefore, with this pair, and this nest, that the male takes, or at least starts, the night shift. (Temp. 76; Sunset 5:30. Max. here today 88. This probably is unusual weather for this time of year and possibly unprecedented).
October 18th. (Not unprecedented).

8:20 A.M. (Temp. 70)

Morning calls. Considerable early morning calling was heard.

Birds off. At 7:46 there were no birds in the nest, but the eggs were warm. G stole into it quietly, however, in less than a minute. She would not take worms.

At 8:05 she called and B took the nest. I went to the glade and G came to ^{me} immediately, flying up to my knee for worms although she had just frozen a few minutes before in the nest.

B inspects glass house and surroundings. At about 8:10 she was back on the nest again, which I determined by going up to the platform. In this position my head is about a foot from the bottom of the house and amongst branches. Immediately there was the sound of feet on the perches in the house and B moved to a twig by my ear, looking curiously in all directions, apparently at nearby objects. He then began a systematic inspection of the house both inside and outside and all the twigs and small branches in its immediate vicinity with only a casual glance or two at me. He peered up, down, sidewise and at all other angles as if looking for something, but uttered no sound, finally leaving.

Former procedure departed from. The rest of the forenoon frequent calls were heard from the nest before changing shift. Contrary to the practice with the earlier nests, this has now become the rule, to which, naturally, there are exceptions. It seems strange that the procedure with the fifth nest should be so different from that of the other four.

5:54. (Temp. 74). Throught the afternoon the same procedure was followed .

October 19th.

No early morning singing was heard, but several loud calls.
A.M.

About 7:45 Greenie was in the nest, Brownie off to the south-east

B comes sitting in a cypress tree 120 yards away. On being called, he ran

120 yards to and flew to the glade making no comment of any kind while eating,

Makes no and departing silently for the nest, without being called. Greenie explanations.

them came for her share. The bird off duty seems to be ranging farther for food now.

7:10 P.M. Nothing out of the ordinary occurred since last entry. I was getting the impression that Brownie was taking shorter shifts at the nest than his mate and showed signs of impatience sooner while on the nest, but Greenie evened up matters this afternoon by taking an hour or more off (I did not time it), during which she remained in the vicinity of the glade, eating, digging and just puttering around with some sub-singing. Strangely, Brownie did not call for her at all, and she went back to the nest, seemingly at a loss for something to do.

G goes to roost About 5:30 Brownie was in the nest and I watched to see if
openly. there would be a change when Greenie returned. However, there was not. Greenie was not at all secretive about her roosting place (Room B). I stood almost directly below it as she approached (dressed entirely in white). She walked by my feet, climbed the tree within arm's reach and settled immediately for the night with no sign of fear or furtiveness. This tree has twin trunks. It is really a

The nest tree.

Other birds large shrub in size, about 15 feet high with a mean spread of perhaps
roost in it. the same. Its canopy is dense. Room A (now the nest) is in the north half, Room B (now Greenie's night roost) in the south half. The two are about 6 or 8 feet apart and at about the same height from the ground.

After G was settled other birds came in and were not driven away.

The mutilated feather on Brownie's left wing is still there. It looks to be the result of some injury. (Feb. 22nd 1934 - when a gap here)

October 20th.

B very quiet.

G calls.

About 7:45 Greenie was in the nest, B coming silently to me in the glade. I then went to the nest and B came too. G, in the nest, called very softly, we-oo-hickey, and stepped out, but did not go more than a couple of feet before going back in again. B went up and inspected the inside of the house, then returned to the glade.

(Temp. 54; wind in the south with increasing cloudiness)(It cleared)

A new call.

7:15 P.M. Incubation routine was carried out faithfully during the day. There were occasional loud calls from the nest. One of the birds uttered an entirely new one which, unfortunately, I failed to note. It contained a long ^{plaintive} trill, unlike sounds usually made by these birds. At bed-time the birds occupied their usual positions,

G tolerated other birds roosting near.

Greenie, going directly from the nest to her roost. There were at least three other ^{smaller} birds in Greenie's half of the tree. I got the impression that it was ^{either} too dark inside the tree for Greenie to eject them, or else she is becoming more tolerant of their presence. Perhaps the former, as I noticed that Greenie fumbled quite a bit in gaining her perch. G still will not take worms from me while she is in the nest, merely freezing.

(Mid-day temp. 70 plus).

October 21st.

G makes temporary change in wing carriage.

5:30 P.M. Incubation proceeded regularly. Little observing was done, though it seemed that Greenie was doing more than her share. For the last few days she has been carrying her wings folded high on her back, contrary to their usual position. When she came off duty about 5:15, she stood in front of me and went through a very elaborate process of stretching and preening and seemed greatly relieved at being temporarily free, running about and scripping. (Temp. 60)

October 22nd.

October 22nd.

At 7:15 A.M. one bird was on the nest, the other evidently out foraging some distance away, as it did not respond to call and was not seen until later.

9:35 P.M. (Temp. 60; max. during the day 76) The birds have been incubating faithfully for 9 days under conditions more favorable as to temperature, wind and rain than obtain during the normal spring nesting season. Rainfall since July 1st. has been 0.33 inches total, normal 0.86, last year to date 0.01 (Oakland records)

Weather con-
ditions.

Singing on the
wane.

Stop talking
to me.

Much preening
and stretching

Brownie seemed to be doing more than his share of the incubation today and there were fewer calls for relief from the nest, possibly because of this. Singing, both full and sub-, seems to be on the wane, and both birds, though lively and friendly, have nothing to say when they come for worms. The bird going off shift usually proceeds at once to the glade, and if I am there, after having a worm or two and a drink, spends a large part of its time in preening and stretching as if to get the kinks out of its joints.

October 23rd.

A few isolated calls, but no early morning sustained song.

At 7:45 A.M. Greenie took over the job of incubation from her mate, the two birds meeting in the glass house and exchanging a few low remarks. B went directly to the glade. (Temp. now 61. minimum during the night 60). This has been ideal weather for hatching.

5:45 P.M. (Temp. now 70. max. during day 81)

Incubation proceeded uninterruptedly throughout the day. There was little calling and practically no singing of any kind. (Possibly favorable these birds are weather prophets and foresaw conditions long enough ahead to warrant their undertaking to rear a late brood!)

Temperature
rises after
sunset.

6:03. (Temp. 72. I happened to pass the thermometer again about 5:55 and noticed that it read 71. I was certain that I had read it

correctly before, so stood and watched it go up to 72. No perceptible breeze for the last half hour at least.

6:30. Back to 71

October 24th.

6:10 P.M. (No notes made during the daylight hours).

There was no early singing, nor was there any during the day.

Making a screen. I worked in the vicinity of the nest all day making a screen to keep off the north wind. Shifts were made without calls during all of this time. Placing of the screen involved moving and cutting of some small branches near the nest and a great deal of noise --hammering, sawing, etc. All of this Greenie, who was in the nest all of the time for several hours, I think, endured without showing evidence of fear as far as I could see, though it must have been a pretty severe strain.

B away long time. Brownie remained away for a long time; in fact was not seen for several hours, finally showing up at 5:30 and going directly to the nest after surveying the ^{new} structure with apparent surprise. The fact that Greenie did not call for relief during this long shift makes it look as if the incident was not unexpected by her. When I tried to give her worms on the nest she froze, but once when I went to the glade immediately after the attempt to see if I could find Brownie, she unexpectedly ran to me for a worm and went back immediately to the nest, as I determined by going there as quickly as I could myself and finding her in it, freezing again when I offered her a worm.

October 25th.

No early morning singing was heard.

A.M.

About 7:30 Greenie was in the nest and Brownie came to me in the glade.

B silent. About 9:15 A.M. Brownie was in the glade, apparently with no vocal organs whatever and as solemn as an owl, but eager for worms. A flock of jays screamed as they flew overhead causing B to dive into the bushes from my knee, only to return immediately.

At 9:30 Greenie called loudly from the nest while I was in that



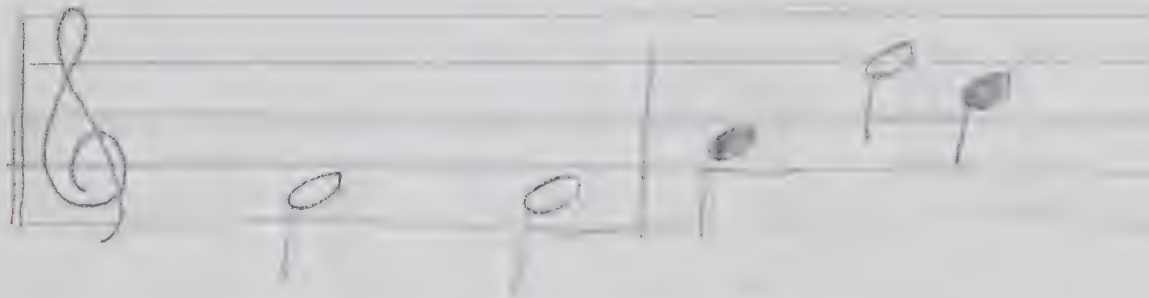
View looking
at the end of path,
(looking back)
the wall.



neighborhood, and was immediately relieved by Brownie. This seemed a good time to see if, by any chance, an egg had hatched 12 days after the first one was laid. There were 3 eggs still. Brownie looked a little cross when I prodded around under him, but immediately gobbled the offered worm and thereafter looked pleasant. (Compare G's attitude of yesterday's notes).

G's call represented as closely as I am able to fit it into the musical scale is given below. This is the nearest I can get to it on the piano, but that instrument can not reproduce the exact intervals. This call was sounded twice in succession.

G's call.



Yerk, Yerk, Tork-deel-yay, Tork, etc.

B eats termites. 1:00P.M. (Temp. 72). Aside from a good exhibition by Brownie of running a drift under the bath dish in the glade and eating termites, nothing to record out of the usual with the thrashers.

Boreal Flicker. As I was watching this performance, there were goldfinches, Fox sparrows, Golden Crowns, Song Sparrows, Jays (Coast Steller and Cal.), Flickers, etc. in and out of the glade. One of the flickers ^{black(?)} had a brilliant red patch on the nape of its neck and ~~no~~ side stripes on the head. As I had never noticed this combination before, I looked up Hoffmann. I did not see the under side of its wings and tail, but it matched in other respects the description of the Boreal Flicker.

At about 4:30 Brownie was in the glade coming silently for worms.

Greenie suddenly appeared from the nest and the two birds seemed to ~~B&G~~ argue as to the propriety of both being off at the same time, using the harsh, sibilant "hah" expression. Greenie was obviously hungry

B does not
want to go to
nest.

and came to me for worms. I thought Brownie, following precedent, would immediately head for the nest, but instead of doing that, he jumped up to my knee and waited patiently for worms. I could imagine the eggs growing cold and wagged a finger at the end of Brownie's bill to make him depart, as usually any sort of movement towards one of these birds at close quarters makes them retreat, unless they think the hand contains food. The only effect this gesture had was to cause Brownie to open his mouth wide, so that I could look down his throat, and make some sort of a comment--the first directed at me for some

He protests
wildly.

Inspects finger-
nail.

I shoo him
away.

Beat him to
nest.

He insults me
by counting
the eggs.

Give a good
feed.

time. He then decided to inspect my finger nail and I drove him off and headed for the nest as the surest way to make him take over the job of incubating. I won by inches, Brownie paused on the edge of the nest (evidently counting ~~them~~ the eggs to see if I had stolen any of them), then slipped into it, calm and unruffled. I then returned to the glade where I gave Greenie a good feed of meal-worms as a reward for her patient attention to duty. There were still three eggs, as there should be. They may have been uncovered for perhaps 2 minutes.

B's damaged
feather.
"The" fly
has gone.

The abnormal feather on B's left wing is still there. "The" fly has not been seen for several days. There is still something that bites the birds occasionally and makes them perform the grotesque antics previously noted.

October 26th.

No early singing or calling. (Temp. at 7:30 A.M., 52. Heavy fog).

G joins B in
glade, B protests.

8:30 A.M. Brownie was in the glade, Greenie on the nest. At about 9:45 the birds were at the same places. Greenie, however, suddenly entered the glade for her share of worms. Brownie protested with a haih. I went to the nest--3 eggs. Greenie came instead of her expected mate, but he came half a minute after and took over the nest at 9:50, remaining there for an hour and five minutes, when he was relieved without having called. Greenie, in approaching, repeated the pewh call barely audibly. In the meantime she had had a good

No young.

bath, changing from one dish to another as the water in the first one

Fastidious- was splashed out, and picking out the floating leaves fastidiously.
ness.

Never dust. (These birds never dust--unlike the Bewick wren which resembles them so much in miniature).

Incubation proceeded regularly throughout the rest of the day.

October 27th.

A.M.

No egg hatched up to about 9:30, at which time I felt three under Greenie. Brownie was in the glade resuming the undersong which he has been neglecting lately.

No eggs hatched after 14 days. Just before 12 Brownie was in the nest. I felt around under

him and had to lift him partly out. Still three eggs --14 days of

3 pecks no. incubation. B pecked me once, and when I withdrew my hand, tried to swallow a finger, immediately thereafter accepting worms with good grace. So far I have only touched the eggs without handling them.

About 5 P.M. Greenie suddenly appeared in the glade where B already was. B showed no disposition to go to the nest, so after several minutes G returned to it. In the meantime I had ascertained that no eggs had hatched.

No young.

October 28th.

Rain.

No early morning singing or calling. About 8:30 a light rain began to fall. Greenie in the nest, Brownie away some place.

11:25 A.M. Signs of clearing. (Temp. 60--rising). About 10:30 Greenie was on the nest, Brownie was located about 250 yards away at the Robinson place, sitting in a Deodar. I called when about 30 feet from him, but he flew over my head toward home. When I reached the glade he was vigorously drying himself, though not very wet. He finished the process, between worms, on my knee. When he left I went to young after he to the nest and took over from Greenie, sitting quietly on its edge until I had assured myself that there were still three eggs. He appeared to look them over carefully before hovering them.

5 days
inspects
eggs.

The eggs have now been incubated continuously for 15, 14 and

13 days respectively, under weather conditions more favorable for the purpose, I would say, than ^{obtained} during any of the other four incubating periods preceding. If they do not hatch, it will be for some cause apart from the weather.

October 29th.

Rain.

Rain during the night.

At 7:30 A.M. Brownie, as I approached the old oak, called loudly:

You-wheet-clee-clee-clee

and dropped down to me in the road. He was only slightly damp.

I went to the glade, and shortly, Greenie could be heard approaching

from the direction of the nest. The two interchanged soft remarks, one of which was the above phrase, then B and G faced each other breast to breast on the same low branch of sage and there was a harsh sibilant sound made by one or both of them. They touched bills and then separated.

As neither showed any disposition to return to the nest, I went there and examined the eggs, taking them out of the nest for the first time. Everything was warm and dry. One egg has a small depression near the large end and the edges of this are somewhat rough. The shell is very thin there.

Greenie came back and resumed incubation, B staying in the glade. There was a good deal of singing of short phrases before 7 o'clock.

9:27. I went to the glade at 9:20--no thrashers there, but Brownie came running in very quickly and I gave him 3 or 4 worms and went to the nest, hoping that he would follow, which he did, unhurriedly, going through the glass house, passing close by my ear. When he was about a foot from the nest Greenie stepped out quietly and I put my hand into it, Brownie sitting quietly on the edge with no evident anxiety. One youngster! It was entirely free from the shell and there was none of the shell in the nest. I withdrew my hand, B examined the contents of the nest, with what it pleases me to regard as

G joins B

Neither inclined to return to nest.

One egg pipped(?)

Early Singing

One egg hatches.

justifiable parental fondness, and stepped in. There was no attempt by the parent to feed the chick. I gave Brownie two worms, both of which he ate himself.

So, now we know, although I did not examine the other eggs on this occasion, to see if it was the suspected egg that hatched, that one youngster was born not earlier than 7:30 A.M. and not later than 9:30 A.M. on the 16th. day after the first egg was laid. (This is not necessarily the incubation period)

G celebrates
with bath

Greenie celebrated the occasion by having a soaking bath which almost completely saturated her. I rewarded her by giving her all the worms she wanted and she continued her drying operation between worms, showing no disposition to take any to the nest. I shall now

Barraze of
tanglefoot.

lay down barrages of tanglefoot for the Argentine ants at strategical points in order to protect the nest, though complete protection, due to interlacing branches, is practically impossible. (Temp. 60)

No

At 10:15 Greenie returned to the nest; there was some billing and low conversation before B left the nest. G carried no visible food supply and was not seen to offer food to the chick. (Rain threatening any moment; S.E. (storm) wind).

At 10:45 Brownie took over, waiting patiently on the edge of the nest until I had determined that there was but one chick. (I can not see into the nest without a mirror). He gave no food. The wind is now strong. Later -

First noted feed-4:40 P.M. At 4:25 I saw Greenie approaching the nest with something.

thing small in her bill. I had just come down from the platform noting that B was the occupant of the nest. I went back to the platform.

When G reached the nest B stepped to one side and stood on the edge; Greenie reached down ^{-to} in the nest, the object still in her bill and seemed to feed the chick, although I could not see down into the nest.

When she raised her head, whatever she had was gone. B left and she

re-settled herself comfortably. This does not look like feeding by regurgitation seen.

gurgitation, and the youngster is not more than 9 hours old. As a

matter of fact, it is definitely known to be less.

G tries to feed meal-worm(?) I then offered Greenie a worm and she froze as usual. I placed it directly under her bill and retreated part way down the ladder, waiting there. She picked up the worm, backed to the far side of the nest, partly out of it, reached down into the nest as I stepped up to the platform. She raised her head, still partly out of the nest, and froze. The worm was gone. I thought I could freeze as long as she, so made the effort and won the contest (raining), for Greenie thawed first, reached down inside, raised her head, and there was the worm in her bill! She froze in that attitude, so I waited. Finally she thawed and ate the worm herself, then resumed her hovering attitude calmly. Of course, nothing was proved definitely, but the circumstantial evidence is pretty strong that her intention was to feed that worm to that chick when she first took it. The case will have to be "continued" as the lawyers say.

If the bird off duty ever uses the glass house as a night roost, tonight would seem to be a good time for it to make the trial, as it is raining hard.

5:25. No sign of the bird off duty. The gutters are carrying water for the first time in many months.

Raining heavily. 7:25. Still raining heavily. Just went to look at the nest and see how the rain was affecting things. No bird was in the glass house. That shows how conservative they are, as they go through it practically every time there is a movement to or from the nest and frequently sit in it a few minutes at a time during the day. Nothing could be seen of the bird off duty. The one on the nest is due for a

Tail is good flume. good wetting, on its back at least. The long tail cocked up at an

angle makes a good flume to run the rain down into the nest. The

Trees concentrate rain. effect of the dense foliage on these trees is to concentrate the rain

into more or less definite vertical streams. An object as large as a man intercepts plenty of these. A bird, if properly placed, might

avoid them all. As far as I could see, there was no concentration at the nest. (Temp. 58).

October 30th.

B is dry.

8:30. About 8:15 I saw Brownie going to the glade. As I entered

he came to me looking perfectly dry after a night of hard rain and strong south wind. He took one worm and ate it, then a second and

B prepares worm
as if to
feed young.

Spent nearly a minute breaking it up on the ground--a sure sign that it was not intended for his own consumption. As I reached the nest,

Greenie was away, B came with the worm, reached down into the nest

and the worm disappeared. He reached down again, withdrew his head

and the worm was in his beak. He then swallowed it after having made

what appeared to be an unsuccessful effort to feed it. I had not

B stands up to
let me feel
under him.

yet felt in the nest to see what the latest news was. B was now

well settled, but I put my fingers underneath him and he very accom-

modatingly stood up, perfectly at ease, interested, and with no sign

of fear or hostility. There were two young and no egg. B then

2 chicks, no
eggs.

B removes
leaves.

reached down and picked out an oak leaf which I had just felt in the

nest and threw it away. I looked all around the ground under the

Missing egg
not found.

tree for the missing egg, but could find nothing but the large ,

perfectly empty large end of one shell. The impression I got

was that the birds had discovered one egg to be a dud and had taken

it away. (Temp. 57)

10:10 A.M. At 10 o'clock I was watching Brownie in the nest

to note the effect of the strong wind and light rain. He is quite

dry. Greenie appeared (also dry), about 6 inches from my ear, in

the house, with nothing in her bill. She went over to the nest.

B does not
want G to
take nest.

Brownie would not get out, but raised his bill and seemed to argue

wordlessly. G then stepped over his head to a twig and B reached up
took hold of her "drum-stick" and gave it a pull, releasing it at

once. G climbed higher and disappeared. The appearance of the whole

affair was as if B were chiding his mate for not bringing food,

ordering her to go and get some and giving her a parting physical

reminder that this was his final word about the business.

Incubation
period is
15 (?) days

This completes the 17th. day of incubation. If we accept the view that the missing egg was disposed of because it was no good, then it is probable that it was the first egg laid. It was due to hatch, then, day before yesterday, the 28th. This would make the incubating period for all the eggs 15 days. This, of course, is speculation.

Torrential
rain.

B in nest
gets wet.

B gives a
meal-worm to
nestling.

I roof the nest.

B bears up
well.

G feeds a
grub.

Both remove
leaves and
are wet.

Young are dry

B shows
courage.

No regurgi-
tative feeding

All feeding
is "raw".

Fairy chorus
begins.

1 P.M. Late in the forenoon there was an almost torrential rain for perhaps a half hour. At about 11:30 I returned to find Brownie on the nest looking pretty well soaked on top. I gave him a worm which he ate himself. A few minutes afterwards I gave him another, which he gave directly to one of the nestlings. I could see it plainly. I spent about an hour arranging a sort of roof over the nest consisting of a sheet of about 14 mesh screen glazed with cellulose acetate. This should keep the rain off. Brownie bore very well all clipping and other disturbance; in his immediate vicinity, and towards the end of the operation, Greenie came with a small white grub which she fed to one of the chicks. Both adults then stood on the edge of the nest, and removed leaves which had fallen into the nest, and gazed at their offspring. The young were dry, but the parents looked pretty uncomfortable. Greenie took charge and endured the remainder of the roofing job patiently. When B returned, he had some more of the small grubs, to which he added two meal worms contributed by me. These he fed to both young birds. This I saw plainly, owing to changes in the surrounding foliage made necessary and raised platform. in order to place the roof. This is not feeding by regurgitation; the food was brought to the nest in the ^{tips of the} bills of the parents and not or elsewhere. After seeing young fed in four thrasher nests (no eggs hatched in the first one) I have yet to see the first regurgitative movement on the part of a thrasher. It will be noted that neither nestling is over 29 hours from the egg, and that one of them is approximately 5 hours old. (That is, if it was born 24 hours after the first one) They have already begun the scarcely audible "fairy

chorus". The excrement is being disposed in the usual way.

3:00 P.M. The parents eat some of the worms themselves and give some to the young. Later when the latter require more food, they will get all of the worms, if the regular pattern is followed.

feeds G. On one of B's returns with 2 worms I had given him in the glade, G, on the nest, opened her bill for one and received it, the other being given to a chick; again repeating previous pattern.

both parents eat soft-food at nest. Later, B on the nest, I offered him soft-food on a spatula, which he ate eagerly, being evidently very hungry. G soon returned and both ate from the spatula. When B left, I offered G soft food and she refused it. Both picked up all the crumbs dropped into the nest. All of this is according to pattern. It will be noted that G, though now more confident in me than earlier in the season, behaves as before **eats only if B is present.** with regard to eating in the nest. That is, she does not refuse my offerings if B is there too. Both birds are now looking dry and comfortable.

October 31st.

Roof works well. 8:00AM. Although the rain has continued at intervals, the nest and its occupants were well protected by the screen placed overhead and everything is dry under it. The rain yesterday brought the season's

Rain above normal. precipitation up from about one third normal to about twice normal.

11:35.A.M. During the morning feeding has proceeded regularly

Food is white grubs. From acorns? In every instance noted the food has appeared to consist of very small white grubs, like those found in acorns. Although the occasional heavy winds of the past few days have caused thousands of acorns to fall at this place alone, and many of them are infested with grubs, it is doubtful whether this is their source, as the acorns are very tough and the thrasher bill may not be able to open them.

Quantity of food given relatively small. At this stage the young do not require much food. This is shown (a) by the fact that they are not being fed often, and (b) by the fact that the parents themselves eat nearly all of the worms

that I offer them. I have not seen anything larger than a mealworm given to the young of this brood. They are being fed without regurgitation. (Temp. 54--absolutely calm--sun breaking through).

1:30 P.M. (Temp. 61, wind shifting to the north).

The stubborn Greenie will take nothing from me while in the nest unless Brownie is there too. Then she is a different bird.

G feeds "fly-About 12 she carried a number of small insects up and fed them to ing ants"?

the young. They looked like the "flying ants" that the rain has caused to swarm, although I did not get a good look at them. In

Thrashers dig them up.

any case, the thrashers are interested in them, as they have dug numerous small holes at various places where the "ants" are coming

Argentine ants attack them.

out of the ground. I noticed that the Argentines are attacking them as they come out. (Or perhaps helping them shed their wings, as they frequently come off during the struggle (??) Termites?

B's behavior in finding mealworms.

A few minutes ago I offered a worm to Brownie on the nest. He then promptly ate it. The second one he took, and froze for perhaps a minute. He then backed out of the nest and tried to give it to the chick nearest me, but abandoned the attempt and fed it to the other one successfully without preparing the worm. (Perhaps when he froze he was trying to arrive at a decision whether he should risk feeding the unprepared worm, go to the ground and break it up, or eat it himself)! Thinking that it might be that the first bird to whom the worm was offered was the younger of the two, and therefore possibly not able to handle so large an object, I selected a small worm and gave it to B. This worked all right. B, considering the subject closed, turned his back on me and settled himself deeply in the nest with sidewise oscillations. No feeding by regurgitation there!

G holds worm 7 minutes.

4:20, Greenie in the nest. I offered her a worm and, as it dropped from my fingers, she took it and held it in the tip of her

Thaws when B comes.

bill 7 minutes (actual timing), when she suddenly backed out of the nest and gave it to a chick. I looked around to see if that meant

that B was coming. It did, for there he was, in the house, a few

B relays food to young via G. inches from my ear. He had a small insect which he gave to Greenie and which she gave to a nestling. (All this about 18 inches from my

G's gentleness.

face). He then moved about a foot closer to my face and looked at me as if expecting something. Of course I handed him a worm, which he drew out from between my fingers with infinite gentleness. G asked for it, was given it and fed another youngster. B stepped into the house and came back with some soft-food which he fed to a young bird himself. He then departed through the house and Greenie hovered the young. There are several interesting things here:

Speculations on this behavior. First, G's resistance broke down to the extent that she did take the worm, but refused to do anything with it until B was certain to be there, and was already near. I know that she saw him coming.

Second, G took all the living food from B and selected the birds to be fed. Perhaps the emphasis should be on the fact that it was the first few helpings and not that it was living. The inference one is tempted to draw is that G knew best or thought she did, which should be ^{fed} first. I leave this to the experts.

Third, B, after getting the key to the feeding order, took a hand himself. This also goes to the experts.

Fourth, B's gentleness in taking worms at the nest is characteristic when he is not going to eat them himself. Usually he is pretty rough about it away from the nest and also when he eats them there. As his pattern in feeding the young is one of gentleness toward them, possibly his gentleness toward me at the same time is merely an extension of the feeding pattern.

Night roost. 9:55 P.M. (Crystal clear, light breeze from the north, Temp. 52)
Reaction to light.

One bird is on the nest, the other in Room B. The only response this bird made when the flash-light was turned full upon its belly from a point about 5 feet below it was to move the middle toe of one foot 2 or 3 times. It seems that it sleeps here when it is

not raining.

(495)

November 1st.

No early singing or calling heard.

Ne gesture. About 8 A.M., as I approached the nest, B ran toward me, jumped up to my hand where he sat contentedly eating worms and flirting his tail--the latter a new gesture. He took no meal-worms to the nest, but foraged near me and got something ~~xxxxxx~~ which he did. His arrival there was announced by talk from G and chirpings by the nestlings. No change of shift was made. When I went up G, although she would take nothing from me in B's absence, was considerably less wooden than she has been lately on the nest.

Increased feed- 5:05 P.M. (Temp. 60; Sunset 5:12). The youngsters are now **ing.** noticeably eating more food and the parents are showing more interest **B feeds most.** in my whereabouts. Brownie is the more zealous feed^{er} of the two adults. If both happen to be off the nest at the same time (which is now becoming a more frequent occurrence) he hurries up to it, if he sees me going up to it, but shows no anxiety if I put my hand in it and usually waits patiently on the rim until it is withdrawn. He then, usually, looks the youngsters over and steps quietly in.

A few minutes ago I handed him six worms in succession; these he divided equally between the chicks without preparing them in any way. He then settled in the nest and would take no more, even for himself. This is the largest feed I ^{had} ~~have~~ seen them have to date ; but when I went to the glade Greenie came and got two more, prepared them both carefully and took them to the nest. This was repeated by B in a minute or two, so that in a space of about 10 minutes the babies were given 10 meal-worms.

November 2nd.

"Bluebird" 10:15 A.M. No early morning singing; in fact the birds confine **l.** their vocal utterances almost entirely to the "bluebird" call, which may be variously interpreted as : pewh, khewh, kewk and so forth,

depending upon how one hears the consonants.

The clucking call to attract the attention of the nestlings to the offer of food has not yet been heard with this brood.

The demand for food is not yet heavy, as instanced by the fact that the parents, particularly Brownie, take worms for themselves and the trips to the nest are not very frequent. Of course there are only two to be fed.

Ground now
soft.

Jerusalem
crickets
not being fed.

The rain has so softened the ground that digging is now very good and the thrashers are taking advantage of the opportunity now afforded them. Now Jerusalem crickets have yet been seen captured by the parents. With former broods, Brownie made by far the most visits to me for worms. The difference between the adults in this respect is now less marked and there is a tendency for them to make alternate round trips, Brownie still being the more active, however. (Temp. 64)

1:00 P.M. (Temp. 71). Greenie, on the nest, took a worm from me but promptly froze. When I heard B's feet on a perch in the glass house, G thawed and gave the worm to a chick. B&G then were given a good feed of soft-food at the nest. As soon as B left, G would eat no more.

A large ant.

2:30. Greenie came to me carrying a jet black object which she promptly threw away with a side flick when I showed her a worm. The creature proved to be a large ant about three quarters of an inch long (by guess). I did not know that there were such large ants at this place.

There are
3
young birds.

4:50. I thought I knew how to count, but it seems I do not. Brownie and Greenie both ran to me for worms as I passed the glade, and took them to the nest. I went there and both ate heartily of soft-food from the spoon. The youngsters crowded up from below and there were three of them. There is no doubt of it. I suppose the parents changed their minds about the other egg's being bad, went and got it, brought it back again and hatched it!

This puts a crimp in some of my speculation.

November 3rd.

At about 8 A.M. Greenie was on the nest, B came to the glade for worms, taking them to the nest. On his third trip I went to the nest, reaching it before him. G would not take food from me until her mate arrived, then they both ate from the spoon hungrily. G took some of the worms from B and fed the young (there are positively three of them) herself. B, for some reason, kept going back and forth between the nest and the glass house. He has done this before. As long as he was near, G would eat, but when he left she stopped. In taking worms ^{in the glade} this time B crimped each one in his bill and dropped it in my lap. Then when he had prepared enough picked them all up again and departed.

Nests 48
and 49.

(These are this year's nest, though now unoccupied, and are from the "chaparral" at a place where Spotted Towhee and Lazuli Bunting nests were thought to be, but not searched for.)

G at last takes 11:20 A.M. When Greenie relieved her mate at the nest and the food at the nest in absence of latter departed, I offered her soft-food in a spoon. (She had just Brownie. brought about six worm-like creatures that looked rather like meal-worms). For a minute or two she would not look at my offering, but finally took a mouthful and swallowed it. I then offered her a worm in my fingers. After a shorter interval she took it and froze, with bill straight up in the air. I waited quietly and then she fed one of the youngsters.. After that she took a worm for each of the other nestlings and would have no more. Her resistance is breaking down.

Scarcity of natural
food.

I have dug up quite a few square yards in the last day or so and found practically nothing, except where the ground has been irrigated. Even there almost nothing is to be found save a few angle-worms. I offered some to Brownie, but he would take only one and that with little enthusiasm. This worm is decidedly a minor

factor in the diet of thrashers.

Alarms.

There were two alarms earlier in the morning. One of them brought both thrashers scripping to the vicinity of the glade, also many other birds. I could find nothing unusual except a flock of Western Bluebirds on top of the Sparrow Hawk pine. Brownie watched them pretty closely and climbed to the top of the old oak for a better view. It is a curious thing that, when one of these alarms occurs, many of the birds that gather sit around quietly and preen,

Attitude
toward Blue-
birds.

Excitement no while Brownie, if present, will often drop down from limb to limb to take a worm offered him over my head, still calling excitedly and then return to the center of attraction.

Intelligent
to eating.

More alarms.

2:50 P.M. There were two more alarms following the two above. One of them was caused by a stray cat about 50 feet from the nest, outside the fence. Both thrashers flew into a tree near it and scripped loudly. Finally one went back to the nest and the other perched on the wind-screen there and kept watch for fully 15 minutes. (Temp. 66)

November 4th.

A good feed.

7:45 A.M. (Temp. 57) A strong north wind is blowing intermittently. The screen affords good protection. Greenie was on the nest and Brownie soon arrived. I held the open worm box by the nest and both adults made haste to cram worms, two or three at a time, down the gullets of their offspring. It was a grand feed.

Greenie sees
the light.

9:00 A.M. Greenie, on the nest without the moral support of Brownie's presence, was offered a worm. She did not know whether to freeze or not, but finally took it. This brought her face to face with a new problem: whether to freeze with bill pointed to the sky as usual, eat it, or pass it on to the nestlings. She made her decision rather quickly and gave it to one of the youngsters. That broke the ice and thereafter, on this occasion, she met me more than half way, reaching for each worm as it was offered without restraint,

then settling comfortably in the nest.

After a few minutes both adults were coming alternately to me in the glade.

10:25. Brownie on the nest, eating soft-food from the spoon, was soon joined by Greenie who brought meal-worms that I had given her a few moments before in the glade. After giving them to the young she joined B at the spoon. When B left she continued eating-- another change in her pattern. When she settled in the nest, the youngsters surged up under her feathers and puffed them out on the sides and she rocked from side to side. These movements were caused by the young birds.

12:30 (Temp. 70). Greenie returned to the nest with something that looked like the large black ant seen yesterday. B, in the nest, wanted her to give it to him, but she avoided him and fed it herself. Both then ate from the spoon freely.

Natural food supply scarce? I am concerned about the food supply. The adults appear to have difficulty in finding food. Sometimes they return to the nest with nothing. Usually, whatever they bring is smaller than a meal worm. The Jerusalem cricket, which formed the major portion of the food for the nestlings during the summer, has been seen carried to the nest only once, and then it was one dug up by Julio. They are not feeding any soft food. At present if I try to feed the young direct with soft-food the parents take it themselves.

7:35 P.M. During the rest of the afternoon no apparent increase could be seen in the supply of natural food taken to the nest.

November 5th.

Effect of heavy wind.

A powerful north wind came up during the night.

Greenie fearful.

At about 8 A.M. it was roaring over the crest of the spur where the nest is located causing the tree to sway. Greenie, in the nest, was plainly afraid when stronger gusts added more commotion. Brownie, in the glade, would not come out for worms, but peered apprehensively

B ditto.

in the direction of each new sound as the wind shifted to different points. I believe the nest would have been practicably untenable but for the wind-screens making a lee. At the nest itself it is calm. Fortunately also it is not cold, (Temp. 60) and the direct rays of the sun are warm.

G would not take worms from me. Although she did not freeze, she was frightened. When Brownie came, carrying nothing, I gave them all a good feed.

B does not want
to go to nest.

9:35. B in the glade, not even hunting for food. He would not come for worms until I went directly to the edge of the brush.

I escort him off venturing to the nest. I walked toward it slowly calling him there. He took three worms and prepared them again and again as if to put and he followed up to the nest. (I think he ^{might} ~~would~~ have gone anyway).

I gave B&G free access to the worm box and they loaded up the youngsters well, then had a good meal of soft-food from the spoon. They did not change shift.

G sticks to nest.
Neither hunts food.

11:00 A.M. The wind continues with unabated violence. I am satisfied that, since about 10 o'clock, no food has been given the nestlings other than that provided by me. Greenie has remained in the nest and B has brought nothing, in fact seems to make no effort to find anything, remaining in the glade most of the time where it is warm and sheltered. He just took one meal-worm to the nest after eating a half dozen himself--a bad sign. He took a long time to get there. Through the medium of the birds at the nest, I gave the youngsters all the worms they could eat. After that B&G had all the soft-food they wanted from the spoon, G talking in pantomime all the time. They did not change shift.

Playings.

12:35 P.M. As I passed the glade about 12 o'clock, Brownie was sunning himself with no cares whatever. I went in a little later and found him singing under-song. Finally he condescended to

take three worms to the nest and relieve G for about 10 minutes,

G trades
worms with me.

during which time she came to the glade, found a cut worm which she exchanged for meal worms, leaving it at my feet. She took the

former to the nest and stayed there, B coming to the glade, his

B not showing
up well.

first act being to find G's cut-worm and eat it himself. In this emergency he is not appearing to advantage as a parent. I then went

to the nest and Greenie took all the worms she needed for the young.

G has difficulty
in feeding.

She has great difficulty in getting the worms down their gullets and sometimes will make as many as 15 or 20 unsuccessful efforts with a single worm before getting it where the young bird can swallow it. During the process, even after releasing the worm, she

often has to reach down and remove it entirely many times.

Clucking resumed.

The parents are now clucking to the young at times.

2:40. The young birds have just had another good feed of

G brings
grubs.

meal-worms, both parents doing the actual work. G brought 5 or 6 very small white grubs. I hope this does not mean that they are unable to find Jerusalem crickets. If it does, I shall probably have to dance attendance on this family until the parents decide that the nestlings are ready for soft-food.

Eyes not open.

None of the chicks has its eyes open as yet.

4:00 P.M. The wind has stopped blowing. (Temp. 65). At 3:20

Wind ceases.

neither adult was on the nest, but B came in a few moments without food and ^{the} little fellows were given a good feed with his assistance.

About 3:40, Greenie came into the glade, also without food, but

took some worms to the nest and did not return. A few minutes

ago neither adult was at the nest, but as I approached, B appeared

near the berry-patch and when I went up to the nest, he came up

quietly with no evident alarm, without food, and sat on the edge

of the nest perfectly at ease while I touched the youngsters to

see if they would open their mouths, which they did. B did not show

B does not o
bject to my
presence at
nest.

hostility or attempt to cover the brood, and when I offered him worms, he fed each one of the family and then hovered them. There can be little doubt that the shaking of the tree and the noise of the wind are disconcerting to these birds, especially the sudden noises coming intermittently from various directions.

4:30 B in the glade, G away. When I went to the nest, B came and we gave the young birds another good feed, as I shall not be able to give them any more today. I hope he sticks on the nest until his mate returns.

November 6th.

The wind was serious annoyance. 9:20 A.M. I told Julio to offer worms to the thrasher on the nest at 5 P.M. This morning he tells me that the adult bird took three worms, distributing them equally, then one or two for itself and then hovered the young. That means that they had had enough.

About 8 this morning they had another round under the auspices of Brownie, and a few minutes ago, another over which Greenie presided. During the last one B came with a large cut-worm, then left presumably to continue foraging. (Dead calm. Temp. 57).

Adults active again. The adults take much more interest in life now that the gale has gone.

9:48. At 9:32 I heard the young birds chirping and Greenie was sitting on the edge of the nest with the first Jerusalem cricket which I have seen captured by the adults for this brood. She was in a frozen attitude. I went up to the nest and she remained motionless for 13 minutes, after which interval Brownie's approach call could be heard. G then fed the cricket without difficulty. Its legs had not been removed. When B arrived he had a long legged thing that looks somewhat like a cricket and a grasshopper at the same time. They are common, but I do not know their name. Two meal-worms in addition satisfied B that the young had had enough, so he took over the nest.

First Jerusalem cricket

B freezes for 13 min.

Thaws when B comes.

Cricket?

Examination
of young
bird.

At 10:45, both parent being absent, I took one of the chicks out of the nest. All have their eyes closed. There ^{was} ~~is~~ very little food in their crops. They are a purplish brown all over. Their flight and tail feathers, and a row down the center line of their backs are out about a quarter of an inch or less. (6mm.) As yet they are but pin-feathers without vanes.

On finishing the inspection Greenie came with a few small worms and finished feeding with meal-worms taken from the worm box.

Before this they had been fed by the parents (with food found by them) a few times. B brought a large ground-spider on one of his returns. The parents are leaving the nest frequently and foraging.

11:35. B has just finished a half hour period at the nest, during which he fed the chicks twice with meal-worms, napped frequently and collected excrement. The latter operation is more or less systematic, the adult bird rising from the nest, sitting on its edge and scrutinizing each youngster carefully as if there were a definite time at which the young defecate.

When Greenie arrived, although B had just fed the young and had stopped before the worm supply was exhausted, she gave them the few small insects which she had in her beak, and then used up the meal-worm supply rapidly, although there were more than enough. I had cut these worms in two to see if that would make feeding easier and it seemed to have the desired effect.

Brownie is more successful at the feeding operation than his mate, making a much easier job of it. This appears to be because he thrusts his bill farther down into the bird's gullet and holds it there longer. I wonder if this means that he has had more experience and is, therefore older.

During part of the foregoing period a Vigors wren was up on the platform with me, eating soft-food out of the dish by one of my feet. These little birds are very bold and soon find food wherever it is

B naps and
scavenges.

I cut worms
in two as
experiment.

Works well.

B more skilful
feeder.

Wildness of
Vigors wren.

placed. Thus they soon discovered the small dish of soft-food that I put inside of the glass house.

12:55. About 12:30 Julio brought a young lizard $3\frac{1}{2}$ inches long which he had caught in the kitchen. It was lively, but did not try to escape. I put it on the rim of the nest while Greenie was there. She did not appear to see it until I touched its tail and caused it to move, whereupon she seized it instantly and was off like a flash. I could not see all that happened but both thrashers were in and out of the glade and out of sight somewhere and then Greenie was seen mounting to the nest with the lizard, minus its tail and not squirming. Before I could get up to the nest, G was seen trying to give it to one of the young birds. When I got there I could not find it by feeling around in the nest amongst the mixture of youngsters and Greenie's feet and legs. I saw all the necks and crops, but none of them were unduly distended. I waited, but G would do nothing about it, so I do not know what happened.

At 1:30 there was no sign evident to me that any of the young birds had eaten the lizard. They all looked alike when B and I fed them.

There is an Indian mortar here having inside dimensions about 8 inches by 15 inches by 6 inches deep. When this is nearly full of water it is just right for a thrasher bath-tub, and they have some fine baths in it. B has just finished one in which she repeatedly jumped into the middle of the tub with a "plunk" that could be heard

75 feet. When last seen he was sitting on the edge of the nest trying to catch flies as they buzzed by. Both adults are full of pep today. (Temp. 70).

There are two ^{more} differences from the pattern noted in connection with former broods. The adults now frequently eat some of the worms I give them, both on and off the nest. I should think that this means the young are really getting plenty of food.

Lizard
episode.

Deep water for
bathing.

B tries catch
flies at nest.

Pattern vari-
ations.

Excrement Also the excrement of the nestlings is not so securely enclosed
ore fragile. by "skin" as before and requires more delicate handling on the part
 of the parents, though the method of disposal is the same.

B's reaction Later in the afternoon an escaped tame canary perched near the
oward canary bird. top of the old oak and called. This attracted the Greenbacked
 Goldfinches, one of whom perched about 2 feet from the canary for
 perhaps 10 minutes, the latter leaving first. The canary broke
 into full song and as soon as Brownie, who was in the glade preening,
 about 10 feet from me, heard the song, he raised his head and listen-
 ed for a few moments, then ran to the trunk of the old oak and rapidly
 climbed up into its branches to within about 10 feet of the canary,
 where he paused and watched him, then, apparently satisfied, return-
 ed to the same branch of the sage on which he had been preening and
 completed that operation. After that he took worms to the nest.

The canary had evidently been at liberty for some time, for
 it seemed perfectly at ease and when it flew away, it seemed as
 vigorous as any wild bird, flying like a linnet. (House finch).

coldest night November 7th. (Sunrise 6:40) (**Minimum during the night 46**)
for many months.

At 8 A.M. both thrashers seemed to be waiting for me near the
 nest. B came at once without food and we gave the young, who appear-
young sluggish? ed sluggish, worms. G was picking up things below the platform and
 when she came up, had a lot of those small white grubs. It looks
the small now as if they do come out of the acorns and the thrashers pick them
grub again. off of the ground. G continued the feeding operation with meal-worms.

Jerusalem cricket. At 9:10 A.M. Brownie brought a Jerusalem cricket to the nest
 within 5 minutes after I had given him worms in the glade. G then
 brought a cut-worm and 3 of the small grubs and followed up with meal-
Reaction to worms from the box. I had put two of the adult beetles in the box
titles. to see what the thrashers would do with them. Although the adults
 eat them when they have a chance to break them up on the ground,

at the nest they would not touch them, suggesting that that reason might be that they had nothing to hammer them on.

I did not record it yesterday, but B got another Jerusalem cricket. Also Mr. Hopkins called in the afternoon to see the thrashers and Brownie, on the nest, after freezing at first, soon took meal-worms from him freely and fed the young birds. (Temp. 50, but warm in the sun).

Birds getting more natural food.

6:00 P.M. (Temp. 60). The birds seemed to be able to get more food today. It appeared to be mostly cut-worms, spiders and grubs. Greenie had one load of what looked like meal-worms. I made up for any deficiencies by giving the adults plenty of meal-worms both at the glade and the nest. The young do not have their eyes open yet. Buffy feathers are showing on their breasts. They sometimes "nibble" at their parents' breast feathers. They can not swallow anything dropped into their mouths. The parents are frequently off the nest now at the same time.

Appearance of young.

Greenie at present is the more persistent feeder. This is another reversal in form.

Brownie frequently eats worms given him without offering any to the young. This is diametrically opposed to his behavior toward earlier broods.

B's reversal of form.

The night shift sleeps.

8:00 P.M. (Temp. 57). I stole up to the nest as quietly as I could, pointing the flashlight ahead of me to give warning of my approach in the event that the occupant was awake. The parent bird (I could not tell which it was) was sound asleep with its head tucked under its back feathers, breathing slowly and regularly. It was just ^a dome of feathers with no visible head or tail seen from the platform side and at a distance of about 18 inches. To see whether it was a bird or just a bunch of feathers, I went around to the other side and below and found that it did have a tail after all. What an easy victim for a cat! I could not see the mate.

Behavior toward visitors.

Dr. Reynolds and Mr. Brock came to see the thrashers this morning. Greenie would not come to me for worms in the glade, keeping near the bushes. Brownie came, but only when I moved away from the others. Both were reluctant to go to the nest in the presence of the visitors, due, I think, primarily to the presence of a rather active small boy. However, Greenie gave a good exhibition of feeding the young when offered worms at the nest. During most of this operation B sat in the glass house a few inches from my ear and ate worms handed him, instead of joining Greenie. I induced Mr. Brock to go up on the

B sits in glass house.

G takes worm from Mr. Brock

Freezing dis-
crossed.

platform and give G a worm, which she took. Although she froze immediately afterwards (not a new phenomenon) it is worthy of note in as view of her having only recently been converted, ~~thnx~~ tending to show that the bird does not discriminate as to individuals so much as to their actions. Thus a stranger offering acceptable food, at a suitable time, in a manner that does not arouse apprehension, is presumably as welcome as an old friend. Freezing does not necessarily indicate fear either, as, I think, has been demonstrated scores of times by these two birds. When a bird takes a worm and freezes I believe that it means simply that it wants no more worms at the moment.

B dangles centipede in hand.

On one of B's visits for worms he dangled a centipede in the palm of my hand.

November 8th.

Adults not seeking food for young? At 7:45 A.M. (Temp. 53) neither adult was at the nest and neither came when I went up to it. B was found in the glade and would

B eats worm himself.

take worms only for himself. He and his mate were travelling about together, doing nothing as far as I could see.

B and I feed young.

At 8:45 there was an alarm in or near the glade joined in by both thrashers and innumerable other birds. When this subsided I went to the nest where B and I gave the young birds a good feed. I gave one of them soft-food on the spatula, B watching interestedly and picking

Chick's
eyes partly
open.

up the crumbs that fell into the nest. The chicks' eyes are now partly open--or at least 2 of them show glints of iris. G came with the same kind of small white grubs on which she specializes; B left and the young birds had another good feed all around.

Greenie sang a few short phrases this morning at various places. (The female singing and the male not).

G brings cut-worm At 9:45 Greenie brought a large cut-worm with which she tried different youngsters until she found one that could take it. A few minutes after G left, B arrived with a small Jerusalem cricket. All the chicks were asleep and none raised its head. I noticed that B did not cluck or make any effort to attract their attention. Perhaps he was better pleased not to have them take notice, for he swallowed the cricket himself. Greenie called from the old oak: Gurkit, gurkit, gurkit! (I wonder if they are thinking about another nest!)

B brings cricket, but eats it himself.

G's call and undersong.

At 10:45 Greenie was singing an undersong at the glade that might very properly be called a whisper song..It contained recognizable phrases. 10 minutes later the two adults and I were giving the youngsters a good feed. On this occasion one of them "squealed" at a parent.

Chick squeals at parent.

B's unusual watchfulness at nest.

12:55 (Temp. 71). I watched Brownie at the nest for about 20 minutes. He sat on the rim looking down into it most of the time. All exposed portions of the interior he scrutinized in detail at as close range as his bill and the presence of the young birds would permit. One particular section he pecked at frequently, but I could not see that he got anything. I thought it might be an occasional ant as the insects were passing by on the vertical limb against which the nest rests, though not in large numbers. I saw none, however in or on the nest. I also thought that the lizard might still be there but could not find it. B allowed me to feel around in the nest, drawing a little to one side, giving me more room. He seemed to watch the individual fingers separately as if they were distinct

Ants?

B's gentleness when I investigate.

entitles, touching them occasionally with his bill, but gently.

B wants to distribute worms brought by G. G refuses. When I withdrew my hand he gave it a few light taps, but did not appear annoyed or frightened. When G came with meal-worms--escapes probably--he joined in the feeding operation, first, by asking G for the worms, which he did not get, and then by taking them from me. Greenie deliberately prevented him from getting the worms she brought and reached over his back to make her own selection from the aspirants.

B continues watch at nest. 2:00. B at the nest, sitting on the edge. He has spent a lot of his time there today. A Cooper Hawk raided the trees and bushes about 75 feet from the nest (after the quail) shortly before noon. Hawk raid. He got nothing, but drove the quail out. One of them froze in the open.

5:35. Nothing special to record until 4:55 at which time through the agency of Brownie the young birds were given a good feed, during which G arrived with a small insect. Both adults then went up into the old oak and there were calls of You're-a-wheat and weet-you.

Roosting preliminaries. At about 5:05 (Sunset 5:05) Greenie approached the night perch, no adult in the nest. B came to the nest and looked into it. He then went up into the top of the tree and looked around. Then returned to the nest. There were then one or two more changes (I was standing at the nest, but it was getting dark inside the tree). Finally G settled in the nest and B went on top of the roof over the nest. I got a flash-light and verified the occupant as G, but could not see B. So G apparently has the night shift now. (Temp. 61).

G takes night shift.

9:45 P.M. (Temp. 60)

November 9th.

8:00 A.M. (Temp. 53. min. during night 52). At this time neither adult was at the nest. Both came to me for worms in the glade.

Indifference to young? G took all of hers to the nest, but was very deliberate about it. B G swallowed immediately the first five or six given him,

Parents do not object my being alone at nest.

Joint feeding.

One chick slighted?

B watches handling of youngsters unconcernedly

then prepared 5 very carefully and went toward the nest, but stopped half way. I went to the nest, finding G giving the youngsters the batch of worms just received from me. She then left, so I was at the nest alone, apparently without causing the parents concern. B did not come, but G returned in a minute or so with grubs and we then gave the young birds all the worms I had, almost all of them going to but two of them. On returning to the glade, I found B there preening after a bath. G came for another worm for the young. I returned to the nest and B came in leisurely fashion, sat on the edge and watched me handle the youngsters, without the slightest concern, right under his bill. The first worm I offered him he ate himself. He then gave the youngsters two and, when I left at 8:45, he was sitting there looking at things.

B makes minute inspection of nest.

B's new behavior at nest discussed.

At 9:45 A.M. when I went to the nest, no adults present, B appeared shortly, but took his time about coming up. When he arrived he made a careful inspection of young and nest, much as a watchmaker inspects a time-piece with his eye magnifier. He then waited patiently to see what I was going to do about it. The youngsters called for food, but he had none. I gave one of them soft-food, B picking up the crumbs and, by his manner, tacitly approving the procedure. When I offered worms, he served them properly, but exacted tribute. It looks as if this bird realizes that there is no necessity for him to go out and hunt food as long as he can get it from me. This conjecture is supported to a certain extent, by the fact, that, with previous broods, he practically never ate worms as long as the brood needed food. Now he eats them often before they are fed, as if he knew that there would be no resultant shortage. The conscientious Greene, on the other hand, continues to forage diligently and also gives all the worms that she gets from me to the young, practically without exception. Incidentally she is now a constant applicant for worms, directly counter to previous behavior, although still shy.

G brings most of the food-- a reversal.

Brownie jumps up on my knee as if by right and waits until I hand him a worm. He even expects now, if I drop a worm, that I will pick it up and give it to him and save him the exertion of getting it himself!

At 10:40 there were no adults at the nest, but B's feet were soon

B resumes
inspection.

heard on the perches in the glass house and he stepped to the rim of the nest and immediately began inspection, tapping the bottom of the nest near the stern of each youngster in order, I suppose, to induce

Joint feed-defecation. When I attempted to feed the chicks with the spatula, he

ing.

was always too quick for me and intercepted each offering, eating it

himself. To avoid stuffing him I stopped, then tapped him on the

B's reaction

to teas-
ing.

back with the spatula. As anticipated, he tried to throw it away.

This was repeated several times. He appeared to be only mildly annoyed, for the last time I tapped him, he noted that there were a few crumbs of soft-food on the stick, so instead of trying to wrench it away from me, he picked them off delicately, and resumed his detailed inspection and police duty.

It will be noted that, while his attitude at the nest is mild and courteous, he is in no sense servile, but is prepared to defend himself against unwarranted intrusions upon his dignity, without being overawed by the superiority in size of his tormentor. At the same time he is not so preoccupied with resenting an encroachment upon his rights as to blind him to opportunities of extracting some recompense from the aggressor.

Puzzling
behavior.

12:55 (Temp. 72). Neither adult at the nest, but B soon came without food and then G carrying something small. B fed the young up to G's arrival, then ate for himself alone, so I pushed him away and he left. G ate nothing herself, but gave the young a good feed, settled upon them and then stared at me fixedly, so I left.

Constant
scrutiny of nest
by B, only.

2:20. I have been watching B's behavior at the nest for about a half hour. Throughout all of that period, except when actually

administering worms, his scrutiny of the interior fabric of the nest has been constant and at bill's length. Every portion except that ~~occ~~ covered by a nestling has been repeatedly examined and probed. As a practical result, he discovered two meal-worms and pulled them out.

Ants?

I believe also that he is on guard against ants. While at the nest his vigilance in this respect has been unceasing. One chick has its lower mandible longer than the upper. Another, during this period,

One chick being slighted.

was much neglected in feeding and was jammed down in the bottom of the nest. B objected a little to my digging him out, as I had to upset things a little, and pecked me lightly, but he immediately took worms for him as soon as he opened his bill.

B's constant vigilance.

B is certainly, at the nest, an extremely good parent.

3:15. I left Brownie at the nest still watching the interior. I have

G loafing, not feeding young

not seen him away from the nest for more than 2 hours, nor Greenie at it. G, at present, is loafing in the glade. She came to me and took four worms, prepared them on the ground, but after 15 minutes had not taken them to the nest.

B "turns sour" on nest.

At 4:30 Greenie was on the nest, but. I imagined, did not look very friendly and would not take worms until B came, which it did

B warns G to stop feeding.

rather quickly. They both then fed the young in rapid succession, until B opened his bill at G as if to tell her to stop. She persisted and he pecked her, not very hard. She still persisted and he delivered

Drives her away, and resumes watch.

a series of rapid, apparently hard blows at her mouth and she fled precipitately. He then began his watch of the inside of the nest.

A good guess.

I went to the glade, feeling sorry for Greenie, and offered her worms suggesting that she eat them herself and thinking that after the repulse by Brownie, she might. As a matter of fact she did. I then gave her more and she started for the nest. I followed to see what would happen. She sat for some minutes about 6 feet from the nest,

B objects again to G feeding.

then approached it through the house and was greeted by B with open bill. He tried to repulse her, but she delivered her load, only to

G driven off. to be again driven off with blows about the head and a final push on her body as she left. B then resumed his inspection. I would like to know what all this means. I have never seen it before.

Dr. Brownie. B is watching the young and the nest like a physician at a bedside
G sulks (?) during the crisis. I offered him a worm to see what would happen
in tree and he gulped it down promptly, which means nothing to me. G did not leave the tree while I was there, but sat apart.

At 5:10 B was still in the nest but not moving.

As a guess, perhaps the repulse of G meant that the young, in B's opinion, had enough food.

November 10th. (Min. last night 50)

Ants in nest! 9:30 A.M. About 7:45 A.M. I went to the nest. The parents were absent and the nest was full of the accursed Argentine ants.

1 youngster dead. The young bird that I thought was getting slighted in the distribution of food was dead in the bottom of the nest, flattened out and cold.

B attacks ants. Brownie came almost at once and attacked the ants. I lifted the living youngsters out of the nest. B not objecting--in fact as I put my hand out. in the nest he picked an ant off of it. He at once started hammering the bottom of the nest vigorously, and shaking it with his bill so powerfully that a shower of small particles fell through the bottom.

B shakes nest, Put young back I removed the ants from the youngsters, killed all the ants I could see and put them back for B to feed with meal worms. I then went about and reenforced my barrages of tangle-foot. There were a few bridges across them where pine-needles had been blown by the wind. The ants were using these to a certain extent, but no doubt also gaining access to the nest from surrounding trees and shrubs with interlacing branches. They were even on Brownie, but he ignored ants on himself.

B ignores ants on himself. them in his concern for the young. There seemed nothing to do but

Nest foul destroy the nest as it was also foul, due I thought at the time, to imperfect scavenging on account of the birds' preoccupation with the ants.

I make a new nest.

I decided to "make" another nest first and substitute it for the existing one. I got one of those hemispherical sieves with a handle that they use in kitchens, borrowed an old, but clean, Brown Towhee's nest, put it in the sieve, enlarged it by spreading and backed it in firmly with strips of sacking. This produced a nest with a convenient handle, that could ^{be} put any place. It really looked pretty good.

Put young into it.

I waited until B was off to get some food, then put the two youngsters in the new nest and tore out the old one ruthlessly, placing the new one temporarily in its place. If the parents should refuse to accept the substitution I was "up against it good and plenty".

Parents accept the change.

However, Greenie soon came with an enormous Jerusalem cricket and did not even hesitate to examine the strange structure, and, in a few moments B came with a centipede as wide as a lead-pencil.

B inspects it for ants.

After feeding this, he resumed his ant-inspection, but found none in the nest so, for the first time noted, began picking them off of a nearby branch. The next step seems, at the moment, to be placing the nest in the house and shutting that off absolutely from contact

Young ill?

with any portion of the tree. However, I noted that the faeces of the nestlings ^{have} ~~xxx~~ now become very fluid (as ^{they do} ~~xxx~~ when they are ready to leave the nest) so as it does not seem time for this change, I am not sure that it is not a sign of illness and possible failure

Which is cause and which effect?

to recuperate. It may be also, that this increasing fluidity has attracted the ants and it is not clear where cause and effect should be located.

New nest great improvement.

10:15 A.M. The new nest is functioning perfectly. It is roomier and has a firm margin which enables the parents to select readily the most effective vantage point from which to administer food. They are taking full advantage of this feature, which also is of assistance to Brownie in ant-inspection. The survivors have suffered no loss

B a fine parent at nest.

of appetite. B's "bedside manner" is perfection. Nothing could

surpass his patience and solicitude at the nest. For the first time, just now, he made a determined--though unsuccessful--effort to feed one of the chicks with a large lump of soft food. Crumbling defeated him.

B's inspections discontinued. 12:45 (Temp. 71). The regular routine goes on as usual at the new nest, but B has practically ceased his inspection of ants. I am

somewhat at a loss as to the next step. The young seem vigorous and contented and there is no evidence of fouling of the nest.

B approves my feeding them. 1:30 P.M. B sat behind the young birds on the edge of the nest

facing me and watched me give them soft-food without trying to interfere in the slightest. His expression was bright and interested. His part was to pick up the crumbs. Whenever I offered him a share, he took it, but made no effort to feed the young birds, except with worms.

Feeding device.

4:05 P.M. (Temp. 68). After renewing the strips of tanglefoot and installing the new nest, the ants ceased to cause trouble. Brownie stopped his inspection and, about 3:20, considered it safe to go to the glade where Greenie already was. In the meantime I had rigged up a sort of syringe, using a glass tube in which was fitted a piston retracted by a spring. By filling this with soft food and pressing the rod attached to the piston a cylindrical ly shaped to any desired length and about $\frac{1}{4}$ inch (6mm.) diameter. core of food is forced out. This enables me to put the food down the gullets of the chicks and keeps Brownie from intercepting it. He

B approves (?) accepts the arrangement philosophically, in fact will take food from it himself. It was after feeding them with this appliance and

B recovers spirits and sings.

permitting B to follow up with worms, that he decided to take a short vacation in the glade, where his spirits rapidly recovered, so that he sang a little.

Losing interest?

5:20 Just fed the youngsters with the squirt gun. B watched interestedly, but when I offered him worms to top off with, he ate them all himself and seemed anxious to get away. When G arrived

it was too dark inside the tree to tell the adults apart, but when I offered her worms with which to give the young birds a last feed, also ate them herself. Do they know, or do they only assume that I gave them enough?

November 11th. (Min. during the night 50).

8:30 A.M. It is curious, but the attitude of Brownie is the same this morning.

Parents neglect- At 7:45 I went to the nest, and, as soon as I touched it, the **ing feeding?** youngsters popped up like jacks-in-the-box. B came at once, but not hurriedly, and stopped short of the nest at my shoulder, where he reached for a worm. I held the worm box at the nest and he went there and ate all he wanted himself, feeding only one to one bird. He then paused as if assuming that the next move was mine and that his only function was to supervise feeding and keep the nest clean. This is exactly what he did. I fed the nestlings with the squirt gun, B picked up the crumbs and ate them and picked up the droppings. If I failed to get the food far enough down the gullets, he reached forward, took it out and ate it and picked crumbs off of their beaks and from the tip of the "gun".

At 9:A.M. I gave another round of soft food, Greenie, this time, coming with a spider and topping off with meal-worms after eating some herself.

Mixed bathing. At 9:45 both B&G were having a bath in the Indian mortar, first one, then the other and then both together, making a thorough job of it. To wash their heads they will stand on the rim and immerse their heads entirely, shaking vigorously, sometimes with little squeaks and pips. Knowing they would be wet for some time, I went to the nest and gave the youngsters a feed of warm, moist soft-food. The squirt-gun makes it very easy and they open up with little hesitation. The food is kept warm in an improvised water-bath heated by a minute gas flame. No ants about the nest. The youngsters are

lively, stretching their wings and legs and arching their backs. They are about as handsome as young alligators, which they resemble in front view more than a little.

Without striving for scientific exactitude, they may be considered as 2 weeks old.

I doubt if they would have survived the windy period recorded if it had not been for the screen and my making up for the parental reluctance to go after food during that time.

It seems certain that the ant menace, if not corrected, would have destroyed them. On the whole, so far, weather conditions have been more favorable than obtain during the regular season.

12:30 (Temp. 72)

A heavy wind.

2:30 P.M. A north wind is beginning to sweep over the crest of the spur and the parents are reluctant to leave the glade, where they preen and loaf about.

Parents not feeding young.

3:00. Brownie will eat worms for his own account only, it seems. Greenie takes worms, prepares them, runs to the top of the bank at the north side of the glade and turns back to Brownie in the bushes. Once she did this about a dozen times. Meanwhile I see that the young do not lack food. They do not shrink from me and behave toward me as they do to their parents.

Take nest to glade and show to parents.

3:30 . The parents still in the glade. I took the nest down there bodily and showed it to the thrashers. Brownie approached carefully, took worms from me and prepared them on the ground. He wandered about with them in his bill, clearly puzzled about the situation. Finally he jumped up on to the nest and tried to feed them but this was one of the times that he was awkward and did not succeed. He waited a time then made a second unsuccessful effort, finally abandoning the attempt, eating the worms himself. Greenie was near, but remained in the bushes, watching at times with little interest. One of the adults dug up a spider, but instead of giving it to the

Reactions.

the young birds, took it to its mate, who ate it.

It seems clear that B recognized the young birds as his offspring, or at least as birds to be fed. Neither seemed at all concerned about this procedure.

Young take in-doors. I then took nest and all indoors. The youngsters seem perfectly contented with this arrangement, showing no fear and coming to me for food when they want it, sleeping meanwhile.

6:00 P.M. Neither of the adults could be found in the nest tree. The young are indoors sleeping comfortably in the nest with a light cloth over them. (Outside temp. 64)

November 12th.

Sleep all night. 8:00 A.M. (Temp. 57) The youngsters remained perfectly quiet, as far as I could see, from 5 P.M. yesterday until about 5:45 A.M. this morning. An occasional chirp was heard at that time. About 6:30 I entered the room where they were and they immediately stood up in their nest, stretched their necks toward me and began calling. They watched me as I moved about the room. I gave them warm, moist soft-food with the squirt-gun. They are beginning to help a little by "impaling" themselves when they feel the end of the glass tube in their throats. Their necks are stronger. All of their visible bodily functions seem to be normal and they are voiding their excrement by backing up to the edge of the nest and discharging it out of the way.

Parents' attitude toward me unchanged. At 7:45 A.M. I went to the glade to see how the adults would act towards this new situation. They both came to me at once from the bushes, Brownie jumping to my knee and Greenie to my left hand, then to my knee when B had gone. Both ate at the same time, showed neither fear of me nor resentment toward me and neither showed the slightest residue of a tendency to gather worms for feeding the, now, absent fledglings.

I put the old nest back in its original place to see if any-

thing happens.

11:45 A.M. (Temp. 72) . The adults are loafing in the glade, friendly and apparently perfectly happy.

The young birds are in the shop, also happy. They sleep about half to three quarters of an hour and then ask for food. I give them a little at a time. There is not the slightest difficulty in feeding them at present. From the volume and appearance of the faeces,

Food not all
digested?

I am inclined to think that a very considerable portion of the food

Parents disposal of faecal matter of young suggest it has food value. administered is not digested. This suggests that the parents' method of disposal of the waste is not dictated entirely by considerations of sanitation. It may have a definite food value. This suggests further that the parents may depend upon it in part for their own food supply, and reference to back notes will show, that, with earlier nests, the parents ate practically none of the worms given them, but, with this last one, Brownie especially, missed few opportunities of keeping himself well supplied from food intended for the young. The inference here might be that the natural food supply was limited, therefore the parents had a two-fold limitation imposed upon them, hence fell back more upon the food given by me. This, of course, is mere speculation as far as I am concerned.

Food supply
limited.

2:10. The parents remain friendly. Every time I have gone to the glade today they have been there. Just now they both hurried out from the bushes when called, B singing as he came. I'll bet that they are glad to have this affair off their hands!

No hardships
due to weather.

6:00 P.M. (Temp. 69) Certainly as far as temperatures are concerned, there were no hardships thus far in the October-November breeding season.

Roosting.

8:30 P.M. (Temp. 69) Could not find either B or G in the nest tree or in G's first tree. This shows that, while they do occupy the same twig as a roost for many nights in succession, they do change.

Note both gone after dark.

This naturally causes curiosity to be aroused as to whether they build nests always at the roosting place of one of them. (In the last instance the male's). If so, does the selection of the present roost, wherever it may be, mean that they are considering another nest? If so, do they consider the last one sufficiently unsatisfactory to impel them to build another? Etc. . . .etc .

Youngsters,
when awake
at night want
no food.

The young birds were last fed a little after sunset, then they went to sleep as they presumably do when at home. I carried them into the house about six and they woke up, and preened a little and looked around curiously, but they did not ask for food. Perhaps this is a fortunate provision of nature which keeps their appetites suppressed during the hours of darkness. I hope it is.

About 10:30 P.M. I moved them into a bath room. They straightend themselves up and preened and looked about, but did not ask for food. They had not been asleep all this time, because there was a new row of droppings about the edge of the nest, about a dozen.

November 13th

One young bird began calling about 6:15 A.M. They had defecated 2 or 3 times more, only, during the night, and again when they saw food coming. For a short period they wanted food every 15 or 20 minutes, then their wants lessened.

The bird that calls with the loud chirp is the larger, but it has been eating somewhat less food than the other. The latter is more skilful in getting it down. They are not helping by lunging forward as the chicks in No. 3 nest did at the same age.

9:00 A.M. A powerful north wind came up during the night and a fire is raging in the hills to the east, at time shutting out the sunlight. I went to see how B&G were faring, and, as expected, they

Thrashers
fear wind.

came out of the bushes in the glade as soon as I entered, very subdued and meek, but pathetically eager for worms. They decidedly do not like heavy winds and seek cover. The glade was full of other

birds where it is calm, but noisy from the wind. (Temp. 67).

11:00 A.M. (Temp. 74)

12:00 M. (" 77)

12:20 P.M. (" 78) I watched the young birds in the mottled

Too warm for young and old. shade indoors. The smaller, when it got too warm, opened its

Similar behavior. bill, the other climbed up on to the rim of the nest and poised with open wings, but did not open its bill. I had already, as a first guess, tentatively ascribed characteristics which, in addition to greater size, seemed to be more appropriate to a male bird than to a female one. It is noisier, more inclined to climb about and less tractable. (Probably it is also the older). I went out to

B, though too see B&G in the glade. G came first cool and calm. B came next, warm, takes sun bath. running with bill open and perched on my knee keeping his bill open and wings spread as long as he was there. He then took a long sun-bath, which is curious if he was already too warm. He was then

joined by G and both of them were "sun-fitting" about a foot apart. especially B's/me

Plumage thicker? Their plumage impressed as being much more voluminous than earlier in the year, as they spread it out, and perhaps that is why B feels the heat more. I could not help noting the apparent coin-

Males hotter birds? cidence between the reactions of the male and the suspected male towards the heat of the direct sun.

Consult Mr. Brock About 2:30 I took the young thrashers down to Mr. J.W. Brock re care of young. for suggestions as to food and care and to give him an opportunity to pass upon their fitness. He considered them in very good condition and made recommendations as to feeding in addition to those already kindly furnished by him. As a result the proportion of meal-worms will be increased and the soft food will be fed thinner, especially in warm weather.

Reaction of parents to young. On my return about 3:15 I took the young birds to the glade.

B chose this moment to be absent, but G came for worms, and although she looked at her offspring, she showed no interest in them.

3:35. As it gets cooler they are showing more activity, comb-

ing out their feathers, pecking at things, etc.

November 14th.

At 5:30 A.M. one of the young thrashers, the noisiest one, began to call, so both were fed. Again at about 6:30 when "Noisy" again made himself heard; from that time until about 9, every three-quarters to full hour.

At 9:00 A.M. I went to look up B&G, finding them at the oval lawn. B came promptly for worms, but G ran to the ^{glade} ~~oval lawn~~ after examining a fresh heap of quail feathers on the lawn, caused, probably by a hawk raid. I went to the glade and G came to me somewhat timidly and later Brownie. Both of them picked up and dropped twigs and soap-root fibre! They are keeping in touch with each other, largely by means of the "bluebird" call when out of sight of each other. They have not been seen to approach the old nest.

B&G pick up nest material

Parents' attitude toward young.

About 12:30 I took the little fellows out to the oval lawn where Brownie was singing his sub-song and held a worm where B would have to see the young birds if he came for it. He got this, and other, worms, was well aware of the presence of his family, as he showed by ^{but} his actions, did nothing about it. Greenie then came and circled about on the ground about 10 feet away, holding herself very erect so as to get a good view, but would not come much nearer.

B tries to dismember lizard.

At 2:25 Brownie was working very hard trying to dismember a lizard ^{some}. He flew to me for a worm then returned to the lizard. Because he does not hold it with his feet, he throws it all about. Greenie came for a good meal, occasionally going to see how B was progressing. I left him still at it, but think it is too large and tough for him, though if he keeps at it long enough, he may wear it down to convenient size in time.

November 15th.

Young less vocal.

The young birds did not call early this morning and were not fed until about 6:30. They were less vocal than usual. At the 9:0'clock

"Noisy" seems dull. feeding Noisy, who has been eating less than the other and is not so lively, did not open his bill for food and looked dull. I decided to give him a forced-feed of chopped meal-worms, which was done.

At 9:30 Brownie came running for worms in the glade, but G was not seen at that time.

11:40 A.M. The forced feeding of the youngster seems to have ^{ened} liv- him up, and since that time he has taken food almost as freely as the other one. At about 11 I carried them out into the direct sun in the cloister, exposing them to the sun but a few moments.

Youngsters "subfit".

Instantly both performed the antics of the adult birds when they "do sun-fits". Each raised one wing on the sunward side, turned partly over on the other side, opened their bills and began to breathe rapidly and caused their nictitating membranes to flutter. (The first time these membranes have been seen on these two birds).

Eye color.

With contracted pupils, it was evident that both birds have irides of a dusky brown, deeper in shade than Greenie's, with none of the orange of Brownie's. The pupils in direct sun appear dark with a bluish fluorescence, like the bloom on a grape. The natal down is attached to the very tips of the growing feathers.

Fluorescent pupils.

Upper eyelids movable.

The upper eyelids are movable, apparently voluntarily, though the range of movement appears to be less than the lower lids have.

They can not really walk, though they can stand up momentarily.

Length 5 inches. They were measured in repose (without necks stretched out) and are less than 5 inches long from tip of bill to tip of tail.

Unafraid.

When held in the hand they do not try to escape, but are content-ed to preen and nap. They are almost silent.

Undersized?

Average age, approximately 18 days. They appear less advanced than other broods.

At 12:15 B&G were loafing in the bushes in the glade. G was the first to come forward for worms but B came with a rush and won on the first offering. After that, they came alternately. Then B

B&G frolic
over worms.

seized a billful and ran to G, who was now in the bushes, and as she reached for them, B darted behind a bush and offered them from the other side, only to retreat again when G rose to the bait. This was repeated 5 or 6 times, until G finally gave chase and there was a whirlwind for some time in the bushes, so I did not see the outcome. This seemed to be in the spirit of pure play.

The rest of the day I fed a large proportion of meal-worms to the young birds and the dull one seemed to improve.

Usually I have been giving their last meal of the day about 5 or, in one case, 5:30 P.M., then no more until morning. At 10:30 P.M., when I looked at them, they were both so animated and so hungry that I gave them a very small amount of food.

November 16th.

Both young
bright.

The youngsters were not heard calling this morning, but at about 7:30 were bright and cheerful and there seemed no difference in their desire for food. They wanted to get out of the nest, and one of them jumped out and was able to navigate fairly well. The other joined his nest-mate, but was not quite so agile.

Reaction of parents to young. About 9:10 I took them to the glade to observe the reactions of the parents toward them. Brownie soon appeared when called, coming from the "chaparral". He would not feed them and seemed wary of them, spreading out his wings and tail, crouching low and opening his bill, keeping one to three feet away from them and, once, "hatched" at them. They both jumped out, fluttered and jumped along the ground to get to him, instantly interested in him, but he retreated, after taking the worms offered him, and sailed over the fence in a sweeping arc down into the chaparral. I suspected that Greenie was there and he had gone to tell her the news. Sure enough, shortly there was the bluebird call behind me and G came out and approached the nest (in which I had replaced the chicks), keeping low to the ground, and in much the same attitude as her mate. The

youngsters jumped out and tried to get to her, following her as she retreated, about 6 or 8 feet, and while she would take worms from me, she showed no sign of an intention to feed the young. I then dropped worms in front of the latter, so that G, in order to get them, would have to approach them within a few inches. This she did, but was hostile toward them and, at last, pecked one of them as it approached her, so that it cried out. I thought that was enough for the time being, so gathered up the youngsters who were again hungry.

G pecks
young.

Preference for 11:30 (Temp. 61. Forty feet away, in the cloister which is entire-
shade.

ly open to the south 72) The little birds are in the cloister. When given their choice of location, they crawl into the shade.

Brownie came to me in the glade as tame as ever; G was absent.

Young interested 12:05. The young birds are becoming much interested in surround-
in external world.

ing objects, ~~both~~ being equally curious, pecking at things and appear-

ing to study me at times as if to determine just what place I occupy

Faulty judgment

of in the general scheme. Their judgment of distance is ludicrously
distance.

faulty. One little fellow was making pecks out into the empty air at

spots in my necktie, as I determined by later test, about 6 inches

away. When I show them the box of worms they seem much interested

in the commotion they cause in the bran and peck gently at them,

falling far short. They do not seem to recognize them as articles

Mouths no longer yellow. of food as distinguished from other objects. Their mouths are now

mostly pink inside instead of yellow, though the two birds differ

in respect to hue, one being paler and yellower.

Intolerance of 1:07. (Temp. in cloister 73). With this air temperature, in
direct sun.

the shade, the young bird will not tolerate the direct rays of the

sun for more than 2 or 3 minutes before hunting shady spots. Even

where the temperature is 10 degrees lower, they still seek the shade.

"Noisy", though, like the other, now very quiet, is still the larger

bird in all respects. He seems to have recovered from the dums

completely, but he is not quite so active as the other.

During the rest of the afternoon all functions operated normally.

Trouble
comes.

November 17th. (This memorandum written on the 18th., however, for reasons that will appear below. The events are of the 16th. and 17th.)
(16th) At about 10:20 P.M. I looked at the young birds. They seemed ^{the worst} normal, but the larger one--the one that had had ^{diarrhoea} in the nest and apparently recovered--suddenly gave a harsh scream, spread his wings and dashed about frantically, then subsided with his bill slightly open and, finally falling off to sleep. That reminded me that I had heard a similar scream from the nest before the first youngster was found dead.

"Noisy"
screams.

Symptoms.

About 6:30 the morning of the 17th. I looked at the birds. The large one was stretched out on its side gasping with eyes closed. The eyes of the smaller one were slightly dim and not quite so wide open as usual, but it wanted food. The droppings in the nest were few, but all in the vicinity of the smaller bird. (Of course, this proves nothing). Designate the larger bird by L and the smaller by S.

L dying?

Take them
to the
Brock's.

L was a dying bird if I ever saw one, struggling and gasping as if to expire within a few moments. I got into touch with Mr. John Brock as soon as I could and took both birds over to his house at his suggestion where Mrs. Brock, with great generosity, put aside everything else, prepared a special custard and exerted her special skill in behalf of the youngsters. Jointly we gave them enemas and removed some very fetid matter from L especially, administered a few drops of medicinal oil internally and gave each a minute portion of the custard and a drop of water once when they asked for food. L continued to gasp and make efforts to evacuate unsuccessfully. S was rather lively, but not just right, and occasionally gasped and opened his bill for considerable periods. L seemed about to die.

Special
food

Enemas.

Abdomens
extended

Their abdomens were extended and tense. L was in agony and made plaintive sounds. S seemed doomed to follow the same route. It

Doomed? looked as if there was to be an inexorable pattern to be carried out, beginning with the bird that had died in the nest. Mrs. Brock

Dr. Reynolds suggested that Dr. Reynolds, whose interest in birds is keen and intimate, if told of the situation, might be able to afford them the relief that he has brought to his human clients, so, about noon, the birds were taken to Mr. Brock's place of business for his advice. He made the suggestion, realizing that it would be asking a good deal of a physician and surgeon in active practise to divert his attention to mere birds. As Mr. Brock had just finished telephoning to the doctor's office, finding him absent, the doctor dropped in,

Dr. Reynolds treats them. volunteered instantly to do what he could for them, so we took them to his office where, during the noon hour, he was able to give them his attention, with enemas of glycerine and magnesium sulphate and sub-cutaneous injection of pituitary extract (to stimulate peristalsis), followed by delicate use of forceps in removing impacted faecal matter in large quantities, especially from L.

During the afternoon, the birds were allowed to rest as much as they were able. Both at times slept, but L's gasping, except for short intervals, was incessant. At very wide intervals, each was given a drop of water. About 5:30 I brought them here, expecting L to die any minute. About 7:30 they were still making the good

Astonishing vitality. fight--I am astonished at L's vitality. I gave them an enema of the solution used by Dr. Reynolds. with perhaps a little beneficial effect, a drop or two of water and a portion of the custard about the size of a pea with the "squirt gun", and then allowed them to rest undisturbed. It seemed a miracle to me that they could have survived so long under the disturbing conditions and manipulations

Take them to the Brocks. in addition to their ailments. Later Mr. Brock called up and volunteered the week end efforts of himself and his bird-talented family, night and day, so this was accepted and the youngsters still alive and fighting, taken to his home.

November 18th.

At 7:45 A.M. Brownie and Greenie, whom I had no chance to see yesterday, were at the oval lawn, not working on it. They came to me out in the open for worms freely. When they ran across the dewy grass water flew off of their feet in showers in grind-stone fashion.

L&S still alive. About 9 A.M. Mr. Brock called up--both birds alive! They had had attention during the night, sleep, water and food. Even the "dead" L had asked for food, was no longer gasping, though keeping his bill partly open still. Donald Brock will look out for them throughout the day. (Temp. 62).

About 10:30 I looked for the adults, not finding them in the glade. When I called from the road below the oval lawn, Brownie answered with a short song in which he twice used the hen motive, then came out into the open for worms. Soon Greenie came out using the "bluebird" approach call as she came to get her share. Both birds are sleek and happy. The difference in wing posture still persists, as does also the difference in boldness and eye-color. I confirmed Greenie's eyes as being much lighter than those of the two young birds but of the same basic hue.

G's eyes.

B gives recital. 1:40 P.M. Brownie has just been giving an excellent recital at the oval lawn in which, amongst dozens of phrases that defy any kind of approximation, there were : The Redtailed Hawk, Western Kingbird, Russet-backed Thrush, the hen , the bell-song, whistling for the dog ending in the kissing call, jay, quail, meadowlark, flicker . A new(?) phrase :

(Temp. 68)

Yay-co-ting-ting. Another: O-o-a-aw.

**Condition
of young.**

8:15 P.M. Dr. Reynolds and I went over to the Brocks' to see the thrashers about 2:45. L looked pretty nearly finished with his troubles, to my eyes. S was, in appearance and actions, perhaps a

shade better, though pitifully weak and very hungry, with dull, watery eyes. L was stretched out gasping as when last seen, but manifestly weaker. I was watching L shortly before, the others not having him in view at the moment, and ventured the prediction that he would be dead in ten minutes, based on a gradual relaxation which I thought I saw. When some one protested, I showed them my watch reading 3: 54 and at 3:55 he was dead. One time when my forebodings were warranted.

November 19th.

At 8:30 B&G came to me in the glade. They are now beginning to talk again when I speak to them. After eating G played a little with twigs.

11:55. At 11 o'clock the remaining young thrasher was still alive, looking somewhat better than yesterday. He is eating regularly and seems to have no difficulty in evacuating. His droppings are a dark green in color, but normal in appearance otherwise. He is very weak, but would seem to have at least a chance. The Brocks are attending to him with great care.

At about 8 P.M. he was calling for food.

November 20th.

About 8 A.M. B&G came to me in the glade from the chaparral, where they seem to spend considerable time.

11 A.M. Mr. Brock thinks the young thrasher has a good chance for recovery.

B&G inseparable. 5 P.M. B&G in response to call from the glade, came from the chararral for worms. B to my knee and G to the adjoining chair where I could reach him easily. These birds are inseparable.

November 21st.

About 8 A.M. B&G, tame and friendly, came to me in the glade, taking worms from each hand.

Mr. and Mrs. Brock, with great devotion, are attending the surviving youngster night and day. I saw him shortly before noon,

weak and pathetic, but all bodily functions appering^a to do their part. Mr. Brock is giving his feet special attention to keep him from being crippled if he survives, as he is so weak that he can not spread his toes out properly and doubles them up so that his weight comes upon their backs. This is liable to deform them permanently. He has tied the hind toes in proper relation to the tibia and his front toes are straightened out at intervals to normal position and the bird placed in an old, clean nest squarely upon his feet. The bottom of the nest is loosened up so that he may be able to grasp the fibres. I have been gathering up old towhee nests and sterilizing them. (It is well that the Brown and Spotted Towhees had so many nests here this year!)

S's feet
twisted.

Twigs.

3:15 P.M. B&G had good helping of meal-worms in glade. One of them picked up and carried off a long twig. (Temp. 67)

6:15 (Temp. 60) Unable to find the present roosting places of B&G.

November 22nd.

8:00 A.M. (Temp. 58). About 7:50 I went to the glade, B&G both coming to me promptly, one to my knee and the other to the chair by my side. They did not poach on one another. After eating they examined together various small heaps of possible nesting material and Brownie explored somewhat in detail the location of Nest No. 1, bending and testing twigs, etc. The impulse soon subsided, however.

Nesting
complex.

2:30 P.M. (Temp. 74) B&G still loafing in the glade, very frimndly. B had a good sun-fit and was still at it when I left, not being frightened when I walked by him at ten feet, though he kept an eye on me. He would be an easy mark for a cat.

Roosting. 5:35 P.M. (Temp. 65. Sunset 4:54). A large bird was seen to enter the nest tree, go to the nest, pass on to a higher point about 2 feet from it. About 15 minutes search, practically all at the right

spot revealed one of the thrashers ensconced for the night about 2 feet from the nest. I could make sure only by going up on to the platform and holding the light within 2 Or 3 feet of the bird. They are extremely difficult to find, even when one knows within a foot or two where they are.

November 23rd.

At about 8 A.M. I went to the glade, pausing at the entrance so as not to drive away a siskin that was bathing in the dish at my feet. While waiting for him to finish, a Ruby-crowned Kinglet came into the sage within arm's reach and I tried to see if he would take a worm from my hand (which he would not). Meanwhile one of the thrashers had seen me and was standing patiently alongside me, so I went in and sat down.

A wren gets bold. The usual procedure followed with both thrashers. A Vigors wren came out to take a worm tossed to him, then got another out from under my chair.

Ear Coverts Moulting. Brownie is moulting his ear coverts on both sides. G's do not seem to have commenced.

S improving. (report) 1:00 P.M. (Temp. 74). The young thrashers is getting on nicely. He is much stronger, his feet are now normal and he calls lustily for food. He thinks Mr. Brock should let him have more.

I am to tell the Cooper Club about the thrashers tonight.

November 24 th.

At 8 A.M. the usual took place in the glade. Brownie has so far moulted one ear covert that the ear itself plainly shows.

Adults play. The wing that had the defective feather now has a wide gap at that point. Both are tame and friendly and play together, with some tail-pulling, all in sport. They seem to have no cares, and, since the young were removed, have not been known to leave the property.

I think S weaker 1:45 P.M. I brought the little fellow home about noon. He impressed me decidedly as being weaker than when last seen. While he has a good appetite and his bowels are functioning properly, he can

Feet and legs look hopeless. not use his feet and legs at all, not even being able to sit up without support. If one leg becomes doubled under him, he is not able to restore it to a natural position and his toes are limp and crossed at various angles. Clearly he has a long way to go to recover. Yesterday when I saw him, he was able to stand erect on both feet, with toes properly spread. Now, if he tries to preen, he falls over helplessly.

Mutual reactions of old and young. 3 P.M. I took him out to the glade to his parents--in a cage. Greenie came at once and inspected him curiously, but did not offer to feed him when I gave her worms. He watched with no special interest and did not call. She took one exploratory peck at him, circled about the cage a few times without excitement, dug under it a little and then went about her business digging in the glade. Brownie did not come at

Condition of S all. During the rest of the day he ate regularly, but I noted that he was gassy and strained somewhat at stool, his passages being plainly audible at times at a distance of several feet. He was given all the sun he wanted. His legs became more uncontrollable. During the night he was quiet and did not call at all.

November 25th. Even up to 7 A.M. he did not call. At 5 A.M. he was sleeping soundly and woke only when I turned on a light at 7. He then did not call loudly, only chirping softly.

10:20. His first loud call of the morning. His legs are, if anything still more helpless, though he is bright and cheerful in the sun.

whistled

B. came to me at once in the glade. When I ~~called~~ G at once answered from some place out of sight and approached still scripping.

Very thirsty. The young bird is much more anxious for water than for food. This

Condition. has been characteristic. He can not close his bill at the tips, because the lower mandible has gradually taken a curve of shorter radius than the upper. He has mites and is in a foul state, due partly to his inability to back up and discharge his faeces over the edge of

the nest. I keep several nests in process of sterilization in order to change them frequently.

will be cripple? The kindest thing to do would be to chloroform him, since, if he should live, it looks as if he would be a cripple.

10:35. He will peck a little at food.

During the night the box in which is his nest was kept at a temperature of about 76 by means of an electric light so placed as to show only a dim light in the nest. In the morning he seemed warm. When I got him yesterday, he seemed cold. In fact, was cold.

Condition 6:30 P.M. He has been lively all day, most of it ^{outdoors} in the sun, the temperature in his open box rising as high as 92 (in the shade) without causing him discomfort, as the box is arranged to give him his option of sun or shade. There is certainly nothing wrong with his appetite and thirst. His legs do not seem any stronger. I gave **Patience under** him a little washing where he is dirtiest with a shaving brush, soap and warm water. He is very patient under manipulation, making no outcry and scarcely struggling.

Night roost One of the adult thrashers is now roosting regularly about 2 feet from Nest No. 5. (Thrasher nest).

November 26th.

Condition of S The young thrasher is interested in outside affairs now; he still has no control over his legs, but eats well and his bowels move freely. He is still full of gas. I suspect he may have rickets and a little vitamin D will be added to his food in the form of cod-liver oil.

November 27th.

A dull, chilly day. Brownie showed up at the glade in the morning, but not Greenie.

B sits in night roost at mid-day. 1:30 (Temp. 51). The adults did not respond to calling, so I went in search of them. Brownie was found sitting quietly in his night roost near nest 5. He looked down at me indifferently and would not respond to my blandishments; accordingly I left him there to continue his think-

The little thrasher is getting much more active, and his legs are stronger(?) but his feet are in bad shape, though perhaps slightly better, as he can cling a little with his toes. He is a rather silent youngster, but with a pleasant tinkling talk when I handle or feed him. He does not seem to resent handling and is pecking at his surroundings quite a lot. He also tries scratching with his feet a little and can stretch out one wing ~~xxxxxxxx~~ by using his foot and leg in approved bird fashion, although he falls over when he does it.

On the whole, he appears better. He has had about 3 worms today and a minute portion of soft food. The worms were cut up into pieces and their head ends removed.

His thirst continues. I have been feeding him with egg custard, according to the Brocks' recipe, with the "squirt gun" and water with a medicine dropper. He sometimes shakes his head violently but accepts the water eagerly. when the custard is offered him instead of water. (It is not possible to tell in advance which he wants). To see whether it was the medicine dropper that he associated with water, an experiment was made at a time that he refused the food, by offering him the dropper containing food, instead of water. This did not desceceive him and he refused it promptly. Most of the food was removed from the dropper and water substituted, making a milky mixture. Although thirsty, he refused this. Finally clear water was substituted and he impaled himself on the dropper instantly. I have repeated this one or two times with the same result.

At 2:30 both B&G came to me in the glade, the former with a soft, yacup, ting, ting.

November 28 th,

1:30 P.M. I have the little thrasher in his box out in the sun in the cloister. I can not see that he is improving. There is a rather strong north wind blowing through the trees overhead. During a lull I heard what I thought was distant thrasher music; but when

S's talk.

Experiment
with water
and
food.

L sings

the trees began to roar again, I still heard it, and it occurred to me to listen at the box (temporarily covered to allow the youngster to have a nap) and to my surprise, he was the musician! This is true to precedent in respect to time, for he is now a month old, but he can neither walk nor fly, nor sit on a perch, nor feed himself and, in addition, is distinctly an invalid. The song, while not elaborate, is soft and sweet and ^{bears} unmistakably the thrasher quality.

Another
Norther.

2:25 P.M. When there is a strong norther all the birds make for the sheltered south slope. When I went to the glade just now there were no signs of B&G, but they finally came, after much calling, from

Thrashers
overawed.

the chaparral on the bank by the side-walk. Greenie first, plainly overawed by the sound of the wind and listening acutely in all directions.

Possible
reason for
fear.

Brownie was more phlegmatic about it. I am sure that it is not the physical discomfort of the wind alone that annoys, perhaps its noise is obliterates other sounds, the hearing of which ~~xxx~~ necessary for their safety. In any event, they stick very closely to the brush and are reluctant to come out of it to me even when they will not be exposed to the wind by so doing.

G nesting
reflex.

After both birds had eaten all the worms they wanted, Greenie began picking up twigs, carrying them in random directions, and then dropping them, although, once or twice she did look up into trees with twigs in her bill as if about to carry them up. The twigs were of large size and were definitely selected with discrimination.

The nesting instinct seems never to be entirely dormant in these birds.

Full song
subsiding?

There has been no full song for a week or so, but some sub-singing occasionally.

November 29th.

No observable improvement in the young bird in any respect.

Some undersong by the parents.

November 29th.

Nov. 29.

Mutual reactions of young and old birds. 12:20 P.M. I had the young thrasher in the glade, putting worms beside him for the parents, who are shy of him. Both will take the

offerings, but give nothing to the youngster, who ignores them entirely. One of the adults finally pecked him once, so the test ended.

S digs. When placed on the ground he immediately began digging in it in approved thrasher fashion. He can not pick up worms or food placed in convenient position. There is no change for the better in his

Patient when legs are worked on. feet and legs. He does not resent having them manipulated, likes to

have his chin rubbed and is very fond of sitting in the cupped hands.

Thirsty. His principal want seems to be for water, but he does not recognize it in a dish.

December 1st.

G carries twig to tree. About 8:30 A.M. the glade was deserted. After some calling,

Brownie came and then Greenie, both eager for worms. When finished Greenie began looking over twigs, selected one and carried it up into a horizontal branch of the old oak overhanging the glade. The two birds were using the bluebird call.

S now strong. The little thrasher seems strong and lively, except for his

Splints. feet and legs. I made an unsuccessful effort to apply splints, but will try again.

Dec. 2nd.

At 9:30 A.M. Greenie was in the glade singing undersong. After giving her worms, I found Brownie at the oval lawn, also singing.

S's now sound internally? The youngster continues strong and his digestive apparatus seems to be functioning normally. I manipulate his feet and legs

Likes to have legs worked. Several times a day, straightening out the kinks and bending the joints.

All of this he stands without protest; in fact, he seems to like it.

Every day he is given opportunity to flutter about in the sun for several hours in the cloister where he has ample space.

Dec. 3rd.

(5-7)
Dec. 3rd.

**Nesting
reflex?**

The adults continue friendly, occasionally gathering nesting material, carrying it toward, and sometimes up into, the old oak, which seems to be the focal point of their interest. (This is the tree in which they built their nest No.1).

There has been little, if any, noticeable change in the young thrasher, other than that he seems to be getting stronger.

Dec. 4th.

**Temperature
controlled
quarters
for S.**

I rigged up a box containing a ^{metal} tray under which were placed two 40 watt lamps. The box is lined with heat-insulating material. In the upper compartment I placed a bi-metallic thermostatic arrangement which I made some time ago for another purpose. This may be regulated to maintain any desired temperature above the tray. On the floor of the tray is placed woolen fabric and in this arrangement the young thrasher is installed(when he is confined). The effect of the tray is to give what the plant propagators call "bottom heat", with more moderate temperature in the compartment above. The upper compartment is partly closed with a cloth, and the lamps below are so placed that the bird has his option as to temperature, light, etc. over a considerable range.

When released in the cloister he is given a fibre door-mat on which he can play about and among^{of which} the standing bristles he can dig.

Dec. 5th.

At 9 A.M. I went to the glade, Greenie being the first to answer my call by scripping loudly. Brownie came without comment until he jumped up to my knee, then he began to talk. After eating, Greenie prospected about for twigs, then went up into the old oak and examined various prospective building sites, one of which was old No. 1 location. B gathered and dropped soap-root fibres.

**G looks
for nest site.**

There has been no full song for some time, but under-song is frequent, B chiefly and for long periods at a time. Audibility, say,

**Much under-
song.**

fairly
15 to 100 feet, with frequent imitations on occasion.

S's thirst perpetual. The youngster has an almost perpetual thirst, taking water in preference to food frequently. I have decreased the amount of salt in the custard and am giving him a greater proportion of meal-worms, with their hard heads cut off, and lots of water.

Extraordinary patience and trustfulness. His extraordinary patience under manipulation is remarkable. In removing encrusted food from about the eyes, particles of lint and -ball filaments of down from off the eye, using camel's-hair brush, tweezers, soft cloths, the fingers and even scissors to cut off the ends of feathers that have become distorted and curled over into the eye, I can count on his keeping his head perfectly still without holding it.

B&G's ear covert moult. Brownie and Greenie now have their new ear coverts practically finished. In this, as in other phases of moulting, Brownie has been the more forward bird. At present, at least, the new coverts are lighter in color than the old ones, giving the birds a changed appearance.

Dec. 6th.

B&G excited on seeing S. I took the young thrasher down to the glade and held him in one hand while Greenie and Brownie came for worms. They were a little excited by his presence, but did not offer to feed him. He was perfectly indifferent to them, as parents, but showed interest in their going and comings as he does toward all moving objects.

He ignores parents.

S sings.

About 1 P.M. he was very comfortable in his box in the sun and essayed a comical little thrasher song--mostly low warblings--with one distinct wheet-you. The effort caused him to bob about just as his parents do when they also sing lying down. Curious that he should sing when he can not stand, walk, fly, perch, scratch himself, pick up things with his bill or even eat and drink without assistance. He can, however, preen, although he falls over on one side when he does it.

Does not recognize water and food

He does not recognize food or water as such, but he tries to catch flies

"Catches " and also shadows that fall upon his bill, pulls at cloths and strings, shadows. and is an inveterate digger.

Dec. 7th.

1:30 P.M. Brownie has been full of undersong all day, so far, mostly in the vicinity of the oval lawn. I just gave him worms there and the little wren came too. I offered it worms, but Brownie always took them from me whenever I held my hand. Finally I had enough and the wren came forward boldly, walked up on to my hand fearlessly and took the proffered worm. I suppose this is the same Vigors wren that has been observing and hanging about the outskirts of the feeding operation so long. I doubt if he weighs as much as Brownie's head alone. His plumage is unbelievably perfect. He also walked under me where I crouched on the ground.

Wash youngster. The young thrasher has had a good wash and looks almost present-
No tail. able. He has lost what little tail he had. He seems strong enough, but his feet and legs show no improvement.

B&G's present 5:00 P.M. Brownie roosts regularly close to the location of roost. nest No. 5 behind the wind screen. With his unconscious assistance, Greenie was just located. While Brownie was getting properly settled, he talked a little in low, musical tones, as if to his mate and looked in a certain direction. By following his gaze I saw Greenie also settling himself 5 or 6 feet from B, also behind the wind screen. Neither has been seen to use the glass house as a night roost.

Dec. 8th.

Wren prospective permanent boarder When B&G came for worms this morning, the little wren came also and watched longingly. When the thrashers had had enough, the wren came promptly and took one worm from my hand. It looks as if he would have to be counted on in the future.

Y's liveliness makes harder to feed. The young thrasher is getting harder to feed now that he is getting so lively, as he wants to climb up and see the world. His legs and feet seem no better.

S makes no effort to feed himself or drink. Every morsel of food and every drop of water he has had since the 11th. of November has ^{been} put into his mouth by human hands. He makes no effort whatever to feed himself, yet he is bright and interested in everything that goes on. He takes water in preference to food and drinks large quantities. He has plenty of opportunity to exercise in the sun every day when he is turned loose in the cloister or elsewhere. There have been but three or four cloudy days since he was born.

Dec. 9th.

When I went to the glade this morning, the thrashers were not there, but when I began calling, the little wren came and, after some hesitation, took a worm from my hand. B&G then came from the chaparral and the wren, after disposing of his worm, sat in the bushes watching them eat.

S never (?) closes eyes. It is strange, but I have not seen the little thrasher close his eyes at any time. I believe he is ~~paining~~ ^{padding} some ground on his feet and legs. The hind toe on his left foot is now occupying its proper position a large part of the time and the ^{ankle-hock} knee (?) joint of his right is showing a little more flexibility. He is now curious about water in a small dish (about 2 inches in diameter) and pecks at it vigorously, seeming inclined to crawl into it.

Sun and shade temperature compared. 11:30 A.M. (Temp. 58 (in shade and under an oak). Temp. in cloister 58 (in shade. Cloister is open on one side to the south and floor is spotted with sun and shadow) . Thermometer reading in sun in cloister 110 . The youngster has his choice of sun or shade and moves from one to the other as he sees fit, mostly preferring the shade. When in the sun he "does sun-fits".

12:00 M. Temp. 60. Brownie has been singing about half song almost continuously this morning.

Deposit forming on cornea of S ? There seems to be a an opaque whitish deposit forming in or on the young thrasher's left eye partly over and above the pupil.

It does not wash off. There is a smaller one on the right eye.

Dec. 10th.

9:00 A.M. At about 8:15 I went to the glade--no thrashers there and the wren did not appear. Soon Brownie came, jumped to my knee, but wanted only two worms. He then immediately began to gather soap-root fibre, climbed up the old oak and began callin loudly:

Pit-ye^e, pit-yor^e, Pit-ye^e, pit-yor^e, yor^k.

Meanwhile G, before ^B called had answered my call from a little distance away, by scripping, but did not come to the glade. As I left, I passed the dormitory tree. B was climbing up into it with twigs, which he took to his night roost near nest No.5. All of this is a regular nesting pattern and seems to be more than a mere reflex. (Temp. at 9:30, 56)

S's condition. The youngster remains vigorous and active, but his feet and legs seem no better and the film on the upper part of the corneas is persistent.

Leg treatment. Dec. 11th. I fitted a cork arrangement on the right leg of the young thrasher, so arranged as to straighten the ankle (?) joint partially.

Film on eyes. He was also given an opportunity to dig as much as he pleased in the ground outside. The film on the eyes seems to be encroaching upon the pupil, and I believe his vision is being interfered with to some

Eye treatment. extent. At Dr. Reynolds' suggestion I treated the entire orbit of his eyes with castor oil in order to see if that would make the lids more flexible (since I have not yet seen him close his eyes) the assumption being that the muscles are too weak to overcome the stiffness of the lids caused by the egg-food hardening amongst the feathers. This material is very difficult to keep from lodging there; but he seems to like to have his eyes worked on--also the stiff leg.

Dec. 12th.

The cork was left on all night and taken off this morning. It may have helped slightly, as the joint appeared a little more flexible. The eye-lids seemed not quite so stiff and could be closed with the

S a good patient.

fingers almost completely, the bird not objecting, in fact, seeming to like the manipulation. At Dr. Reynolds' further suggestion, the corneas were washed with a 1 to 10,000 solution of mercuric cyanide and the lids massaged. It is surprising the amount of man-handling this bird will stand. It does not make him fear me at all, although he may be slightly hurt at times. If I place him on the floor and sit near, he does not try to run away, but almost invariably, struggles toward me and tries to climb up on me (which he can do) until he finds a comfortable hollow to lie down in, preferably in the hands.

Flight feathers gone. He has lost nearly all of his flight feathers and is altogether a sorry spectacle. His "innards", however, are functioning perfectly as far as can be seen. He practically never refuses water, but food often. He has not been heard to record for a day or so.

Adults and wind.

This was a day of strong S.E. wind, threatening rain. Again the adult thrashers have shown their dislike for strong winds by keeping to the bushes, and when I offer worms, either not coming out at all, peering out at me from the shelter, or else darting out to get one worm at a time. If I go to the edge of the bushes, they come and take worms from me freely. It is not necessary for them to be exposed to the wind directly themselves, for them to show their dislike of it, as they appear to be constantly on the alert and listening to all sounds

Dec. 13th.

No change in G's eye color.

Heavy rain during the night. The adults were at the oval lawn most of the day. (Not digging in it, however). Greenie's eyes have not changed in color at all, and the difference between the two birds remains constant.

S's eyes swollen.

The lids of the young bird were much swollen this morning, so that his eyes were almost closed. It is impossible to say whether this is due to the oil, the mercuric cyanide, the massage or what.

Leg treatment.

A new arrangement, made of a small rubber hose, was placed on his worst leg. The effect is to exert gentle pressure tending to straight-

en out the joint continuously and insure flexibility at the same time. With this arrangement he is able to sit up on both feet.

Dec. 14th.

Rain during the night and this morning. I went out about 10 A.M. to see how B&G were faring, carrying an umbrella. They came to within 5 or 6 feet of me, but plainly did not like my new equipment. When I put the umbrella behind me where they could still see it, however, the spell was broken.

The youngster's eyes remain swollen, but the leg brace is working well.

Dec. 15th.

9 A.M. No change to be noted in the eye condition of the young bird. The lids are so swollen that the film on the cornea is obscured. He has now lost all of his flight feathers, but is active and cheerful.

B--full
song.

Brownie is full of under-song today and very friendly, occasionally singing a few bars of full song.

Dec. 16th.

10:20 A.M. B&G were both fed at the glade, coming to take worms freely and on the best of terms with each other.

S's condition

The eyes of the young bird are no better. His feet seem hopelessly twisted, though I straighten them out frequently and attach them to "shoes" which keep the toes in correct position for an hour or so at a time.

"Shoes"

Leg improved.

His right leg is improved and he now occasionally tries to straighten it himself by stretching. The toes of that foot seem to have no power of movement at all.

Dec. 17th.

No change.

No improvement of any kind noted in the young thrasher's eyes or legs.

Dec. 18th.

Eyes swollen
more.

The eye lids are swollen more, particularly the left eye. There is now some control of the lower lids, as he partially closes them at

(717)
times. The left leg is improving, but not the foot.

Dec. 18th.

S's eyes nearly closed. Both eyes were nearly closed early in the forenoon. On the left

side the swelling extends to the corners of the mouth. He still seems to like to have his eyes and legs worked on, remaining perfectly quiet during the operation.

The adults do not appear to leave the place at all now and hang about the glade and the oval lawn, doing no digging in the latter.

This morning both were very talkative when they came for worms and

B's frequent thrush imitation. B has been singing undersong full of imitations, the russet-backed thrush song being frequently used--audible about 100 feet.

Dec. 19th.

"Operation" on eyes of S. I spent three hours this morning, working on the eyes of the young

thrasher with four brushes of differing degrees of softness, warm water, tweezers and castor oil, with a little very dilute mercuric cyanide. The result is that he has now two full sized, round eyes with flexible lids that can be closed and moved freely for the first time in many weeks. Incidentally, also, the feathers about the eyes came off with the dried mucus, food, lint, down, etc. which formed a crater-like cone about each eye. He seemed to enjoy the operation and moved only when hungry or thirsty or when he heard some noise in which he was interested; even when feathers came out, he held his head still.

S sings. This seems remarkable to me. (1:15 P.M. The little fellow is out in the cloister and is singing. I heard his song above the sound of this machine, thought it was Brownie and went out to investigate).

The films on the corneas are still there, but do not seem to have increased in area (or diminished).

His song was not in the nature of a call, but was a continuous warbling song, deep in tone, with one Wheat' you.

Picks up worms. After, perhaps, several hundred attempts he managed to pick up and swallow three meal-worms during the course of the day. His judgment of

distance is faulty, inasmuch as he almost invariably lands short of the object at which he aims, no matter where that object is placed. Moving it nearer to him by the amount of his error makes no difference, as he will strike short of it just the same.

Dec. 20th.

Eye region in good shape. The eye-lids and the region about the eyes were in good condition this morning, but were again washed, disinfected and oiled. The right leg and foot appear to be hopeless. Both feet are turned inward with a tendency for the soles to be on top.

B examines nest sites. Brownie, after having worms this morning, examined nesting sites in the old oak, then came down to sing undersong.

S compliments my speed as typist. 3:45 P.M. The young thrasher has just paid my typing a great compliment by singing while I was writing some letters. It was undoubtedly the typewriter that started him off yesterday, although he was outside the room at the time. This time he was about four feet behind me in a cage on the floor. When I stopped, so did he, and when I began again, he struck up also. I did not know I could make a noise continuous enough to start a bird singing.

Dec. 21st.

Consultation on S. Decide to chloroform. I took the young thrasher down to Mr. Brock and we agreed that his legs and feet were hopeless and that he would be a permanent cripple. Under the circumstances, it was considered that it would be an act of mercy to chloroform him, notwithstanding that in other respects (except possibly the clouds on the corneas) he was in good shape physically, cheerful and happy, tame and friendly. Accordingly, though it was a hard thing to do, he was gently put to sleep.

5:07 P.M. (Temp. 52). Brownie went up to the regular roosting perch in the dormitory tree. G was not seen at the time.

Dec. 22nd.

B&G were away, or not in evidence, for most of the morning.

Or perhaps the heavy tule fog had something to do with it. The first one to appear was Greenie, who, after having some worms, began to fuss around with twigs, carrying them nowhere. After that she sang undersong.

Dec. 23rd.

Thrashers and wren. 9:00 A.M. On going to the glade, both thrashers and the little wren came for worms. In fact the wren was there when I entered. For a time all three were taking worms from my hands at the same time.

Undersong was heard at various times during the day.

Dec. 24th.

Varied Thrushes. The varied thrushes have been here several days. Without making any effort to find them, 21 different kinds of birds were seen at this place during the day-- not counting hawks and gulls that flew overhead.

Dec. 24⁵th.

Thrashers and wren. About 9 A.M. I sat in a chair outside the glade, near the wire fence which runs along the slope of "chaparral". Greenie was singing undersong behind me in the glade and her mate was similarly occupied in the chaparral. While the songs were different, it was not possible to distinguish between them and identify the singers by song alone. The wren soon appeared and began working toward me, scolding. Brownie came up the bank and made several efforts to get through the wire fence to me, including a number of attempts to dig under it. Finally, instead of doing the obvious thing: flying over it, he laboriously climbed up through the thick foliage, fighting all the twigs that interfered with his progress, took a good rest on the top wire, then came for worms. Greenie, meanwhile, had worked over through the trees and dropped down directly on to my out-stretched hand--a new performance for her. The wren scolded in a sage bush at my elbow and made short flights to my other hand--I should have had three. This little creature disposed of four meal worms of the largest size in a few minutes, which is about the same number as each of the thrashers took,

(1537)
yet it is certainly no larger than the head of a thrasher. It is curious that these two kinds of birds, which resemble each other so much in outward appearance and posture and yet are so vastly different in bulk, should have also the same attitude toward human beings.

Dec. 26 th.

V. thrushes and waxwings. This morning the varied thrushes and waxwings were conspicuous; the

latter feeding in flocks of about 20 in the pyracantha and cotoneaster

Thrush takes acorn. bushes. One varied thrush carried off an acorn. The thrashers are somewhat disturbed at the presence of these birds (and the dozens of

Thrashers bothered. robins) on account of their rustling in the bushes overhead and their shadows passing rapidly over the ground. They watch them keenly and are reluctant to leave cover

Dec. 27th.

Considerable thrasher undersong and a loud call or two.

Dec. 28th.

Ditto. Thrashers friendly with me and with each other.

Dec. 29th.

B reaction to rain coat. coat. Brownie regarded this with some suspicion, staring fixedly at

the tail of the coat where it hung below the chair and approaching carefully as if an enemy were concealed behind it. Greenie was, as was to be expected, even more shy. However, they overcame their fears and

Sound of rain annoys. took worms readily. It was also evident that they did not like the sound of the rain in the bushes, for, on entering them, they did so with caution, examining the twiggy growth and the sky overhead as if to

Attempt to make B call G. see where the drops and the noise came from. By talking to Brownie, I got him calmed down so that he stayed near me "talking", G having gone elsewhere. I kept repeating to him: "Call Greenie", using pitch and inflection that I thought would be within his understanding and compass. On previous occasions this has seemed to arouse his interest to the extent that he would occasionally become vocal, stretch up to his

full height and peer in all directions as if looking for his mate. I cannot say that he imitated me, but his talk this time, due perhaps to excess of imagination on my part, was modified at intervals with a phrase--not previously recognized--that had more or less of the rhythm and the intonation of the phrase repeated to him. After this "lesson" he went out of the glade and took up a position behind me about 25 feet away--still in the rain-- and sang undersong, approaching full song at times. Whenever he stopped, I was able to start him again by talking to him and making "suggestive" sounds. This was kept up with periods of digging and wandering about, for about three-quarters of an hour. Except for the ends of their tails and beads of water on their plumage, both birds looked dry. Their bills and feet were very muddy with lumps of mud on the former. It is curious, but they do not seem to mind these lumps at all.

Dec. 30 th.

9:30 A.M. (Temp. 51), heavy rain during the night. Neither thrasher in the glade. As I passed through the orchard, Brownie called softly off to one side and came out of the shrubbery for worms. I again tried to get him to call Greenie with, perhaps, a little better results than before. Certainly he used a phrase--not habitual with him--that I am sure some persons might have considered an attempt to repeat my words, and very obviously showed immediate interest in locating something that was not in sight; for he again stretched up, looked in all directions, called softly and ran off apparently to conduct a search through the trees and bushes, finally winding up in the top of the old oak (about 100 feet away), where he sat on a bare stub looking off toward the south east, gurgling. I moved to the vicinity of the dormitory tree to watch him. There was a sound of a bird in or on the glass house in that tree and Greenie flew out, climbing up to join her mate. Going to the glade I was joined by both birds,

Sing in
rain.

Calling
lesson.

